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VOL. XXVIII. FEBRUARY, 1914. NO. 2

STRAIGHT DIRECT LARYNGOSCOPY BRONCHOSCOPY AND ESOPHAGOSCOPY.

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BALTIMORE, MD.

CHAPTER I.

INTRODUCTORY.

Since the examination of the larynx, bronchi and esophagus by the direct method requires a steady hand and extraordinary skill in handling instruments, it is imperative that the beginner should practice on the dummy and on animals before attempting to pass the tubes on the human subject. A good knowledge of the anatomy of the parts should be acquired in the dissecting room, for on it depends the successful solution of the many problems which will present themselves to the bronchoscopist. After one becomes expert, the handling of the instruments is secondary to that confidence which is born of a thorough anatomical study. At the beginning, let it be understood that to learn direct laryngoscopy, bronchoscopy and esophagoscopy well means hours of hard work and disappointment. But one who is ambitious and persevering may rest assured that success will eventually be his. In order to have a clear understanding of what is before one, it will perhaps be better to describe briefly the instruments which are used in the direct examination of the respiratory tract and the esophagus. The two classes of instruments are those devised by Jackson in this country which have the light on a light carrier at the end of the tube and those of Killian and Brunings in Europe which depend for illumination on an electric head light or an electroscope.

The Jackson instruments consist of

One laryngoscope measuring 16 cm. in length and 16 mm. in the inside diameter for adults.

One laryngoscope measuring 14 cm. in length and 12 mm. in the inside diameter for children. Both instruments are made with a separable slide which can be removed when occasion demands as will be explained further on.

One bronchoscope measuring 40 cm. in length and 9 mm. in the inside diameter, the extra large tube for adults.

One bronchoscope measuring 40 cm. in length and 7 mm. in the inside diameter for adults.

One bronchoscope measuring 30 cm. in length and 5 mm. in diameter for children.

One bronchoscope measuring 30 cm. in length and 4 mm. in diameter for children.

One esophagoscope measuring 53 cm. in length and 10 mm. in the inside diameter for adults.

One esophagoscope measuring 45 cm. in length and 7 mm. in the inside diameter for children.

Three probes of different lengths for larynx, bronchi and esophagus.

Three hooks of different lengths for larynx, bronchi and esophagus.

Six cotton carriers for the larynx and bronchi, supplied with screw cuffs to hold the cotton securely.

Six cotton carriers for the esophagus, supplied with narrow cuffs.

One double dry cell battery for lighting the small lamps. The battery has four cells on each side which makes it possible to light two tubes at the same time, the advantage of which will be explained further on.

One tracheoscope measuring 17 cm. in length and 8 mm. in the inside diameter for use through a tracheotomy wound in adults.

One tracheoscope measuring 14 cm. in length and 5 mm. in the inside diameter for children.

Forceps and special instruments will be described later. The writer has all the above instruments in his outfit and has used each of them.

Brunings uses a hand light or an electroscope which is attached to a controller as a means of illuminating his tubes. It consists essentially of a large electric lamp covered by a hood reflector through which the light is reflected on to a mirror which in turn sends the light down through the tubes. The instrument has a convenient handle for holding and below the mirror is an attachment for

the various tubes. As a necessary equipment, Brunings gives

1. The electroscope with supplementary lamp and aseptic cord.
2. The double extension tubes Nos. 1-5. No. 1 (14 mm.) for esophagoscopy. No. 2 (12 mm.) for bronchoscopy, with a second long unperforated sliding tube for esophagoscopy. Nos. 3-5 (10, 8.5, 7 mm.) for bronchoscopy.
3. Two autoscopy spatulae of 13 and 11 mm. diameter. One autoscopic spatula for children.
4. Special bougies for 1, 2 and 3.
5. Two bronchoscopic forceps, 25 and 35 cm. long with five interchangeable end pieces.
6. One esophagoscopic forceps, 50 cm. long with two interchangeable end pieces.
7. A saliva pump with three tubes, 25, 35 and 50 cm. in length.
8. Two hooks for foreign bodies.
9. One dozen double wool carriers. And unless the utmost economy is demanded, he recommends in addition
10. One extension tube of a diameter between Nos. 4 and 5—that is about 7.75 mm.
11. One counter pressure instrument (useful with operative instruments).
12. One short special strong clutch forceps for foreign bodies firmly fixed at the entrance to the gullet.
13. A combined syringe and drug applicator.
14. A glass jar for keeping the forceps in soap spirit.
15. Rectangular spatula for trial autoscopy.
16. One very delicate forceps, 17 to 18 cm. long without end pieces for children.
17. Endoscopic telescope.
18. Prism for double eye piece for two observers.
19. A dilating extractor for foreign bodies embedded in the gullet.
20. A dilating extractor for foreign bodies behind bronchial stenoses.
21. Concentric metal bougies for bronchointubation.
22. Tracheograph tracheometer.
23. Counter pressure autoscope for endo-laryngeal operations under general anesthesia and special operating instrument.
24. Dynamometric dilator for cardiac end of stomach and upper end of gullet.
25. Speculum instrument for endoscopy in children (electroscope for children).
26. Tracheal funnel.
27. Forceps for children.
28. Autoscope for direct autoscopy of the larynx.
29. Operating instruments with special objects.
30. Forceps.
31. Loop extractor.
32. Collar stud forceps.
33. Medicament applicator.

This outfit is mentioned to show the multiplicity of instruments which some men consider necessary for successful work and which tends to frighten those who would take up bronchoscopy. Besides Jackson's instruments mentioned above, the writer has found the modified laryngoscope, measuring 17 cm. in length and 10 mm. in the inside diameter, particularly valuable. It will be referred to in detail under direct laryngoscopy. Other instruments in Jackson's outfit which are needed occasionally are the safety pin closer, the peanut extractor, forceps for dilating a stenosis in front of a foreign body and a pin finder. In buying an outfit, it is a mistake to economize though one does not need all the instruments enumerated by Brunings. It is difficult to decide which of the two outfits is the better. Having worked with Jackson's instruments, the writer prefers them. The mirror

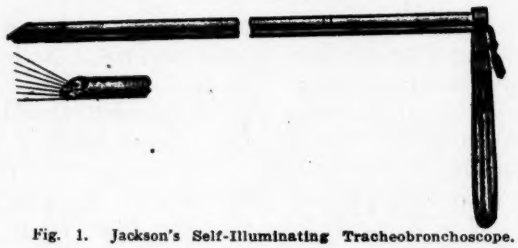

Fig. 1. Jackson's Self-Illuminating Tracheobronchoscope.

in Brunings' handle has a slit in it and it is difficult to learn to work through it after having used the open tubes. The use of a suitable chair and table is important and will be referred to under the writer's special methods. In certain bronchoscopic and esophageal cases, increased secretion is a serious hindrance and it is necessary to pump it out. At the Presbyterian Hospital a water pump attached to a spigot is used successfully for this purpose. As a part of any outfit, there should be tracheotomy instruments because one never knows when he will be called upon to open the trachea.

Forceps. Special attention will be directed to forceps because, next to the tubes, they are the most important instruments for the bronchoscopist. The three types commonly in use are those of Jackson, Brunings and Pfau. The Jackson forceps has a scissors handle into which fit the different length tube biters for the larynx, bronchi and esophagus; they are satisfactory for the 10, 9 and 7 mm. tubes but are too large for the smaller bronchoscopes. In addition to the foreign body tips, there are vari-

ous shaped tips for removing tumors, etc. Dr. S. H. Large of Cleveland has devised a slender forceps to fit the scissors handle which is small enough for the 5 and 4 millimeter bronchoscopes. Brunings' extension forceps is a satisfactory instrument because it is slender enough for the smallest tubes and the handle is curved out of the line of vision. As its name implies, it can be made longer or shorter, and is essentially a foreign body forceps. It has various tips, the most useful of which according to Brunings is the "claw tip." Another useful tip is that devised by McCoy for closing and removing open safety pins. Pfau's model is the ideal instrument for rough work such as the removal of tumors, specimens for microscopic examination, etc. They are the best forceps for impacted foreign bodies. Into the handle fit the different lengths of tubes. It is the instrument of choice for larynx work and for the removal of foreign bodies through the 9 mm. tube.

FIG. 341

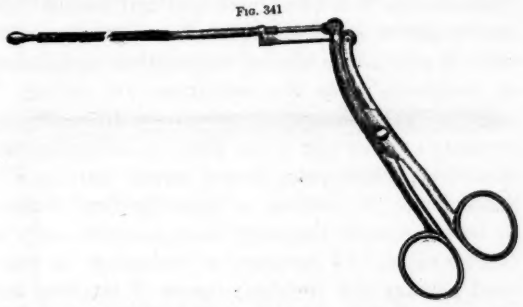

Fig. 2. Jackson's Long Forceps for the removal of foreign bodies by Bronchoscopy.

Practice with the dummy and with animals. The dummy suggested by Killian can be obtained from instrument makers. The only objection to it is its cost, but as it represents the larynx, trachea and bronchi with branches, it is suitable for passing the tubes and trying all sorts of operations. Dogs are easily anaesthetized with small doses of morphine and hyoscine and can then be used for experimental purposes. While passing the tubes is much easier in animals than in the human being, one learns how to handle instruments and to estimate distances in the trachea and bronchi which is difficult always. If the writer were asked the most difficult part of the removal of foreign bodies, he would answer the ability of the eye to estimate distance. The beginner should practice touching certain spots through the tubes passed on the dummy or animals. For the same reason this practice should be persisted in through short tubes, preferably the laryngoscopes until the eye has gotten the proper perspective for distance. When these points have been mastered, the most important preliminary work has been done and the operator may safely attempt bronchoscopy and esophagoscopy in human beings provided he has patience and perseverance, for the work must be done most carefully and one must look for failure after failure which will tax his patience to the utmost. The writer does not believe in practice on the cadaver for *rigor mortis* makes the work too difficult while, after it passes off, the tubes slip in too easily.

CHAPTER II.

ANESTHESIA, LOCAL AND GENERAL. THE USE OF OXYGEN.

While anesthesia will be taken up more particularly under the different operative procedures, it may not be amiss to give here a few general observations from the writer's experience. The value and methods of local anesthesia have been discussed for years and opinions now are probably as diverse as in the beginning. Some laryngologists still use cocaine in all operative work despite the fact that it is the most toxic of all local anesthetics. This fact has been proven time and time again not only by actual experience but by unprejudiced comparison with other drugs. Having used all the local anesthetics in larynx, bronchi and esophagus during the past five years, the writer is prepared to say that two drugs are far less toxic than cocaine and when used properly are just as efficient in producing anesthesia. Moreover, they do not give rise to an exhilarating effect and there is no danger of a habit with prolonged use. These drugs are alypin and novocain, both of which have been used often in operative work in larynx and bronchi in strong solutions and in larger quantities than one would dare use cocain. Notwithstanding the fact that the *Journal of the American Medical Association* claims that alypin is just as toxic as cocain, a fair comparison is all in favor of the former drug. The writer after an extensive use of alypin and novocain is prepared to state that the anesthetic properties of these drugs is just as great as cocaine; that the anesthesia lasts as long; that they can be used in stronger solutions; that they can be repeated as often as may be necessary; and that he has never seen toxic symptoms from their use. In many cases the quantity used has far exceeded the dangerous point of cocaine. In patients susceptible to cocaine, the substitution of alypin enables the surgeon to work without worry. In the clinic of the Presbyterian Hospital, alypin is regularly used as having a quicker action than novocain. In children, 4 years old and under, no anesthetic, local or general, is used in direct laryngoscopy, bronchoscopy or esopha-

goscopy except in the case of a sharp foreign body or a pin. The patient is simply held and the examination made as will be described later. In older children up to 8 years of age, no anesthetic is used for direct laryngoscopy and the examination of the upper end of the esophagus; for bronchoscopy and deep esophagoscopy, ether is given after a preliminary injection of atropine. In adults practically all examinations of the larynx, the bronchi and the esophagus are made under alypin anesthesia. If the examination is to be a long one, the patient is given atropine. The former method of giving morphine hypodermically has been discontinued except in very nervous individuals. While no bad effects except nausea have been noticed, its use is unnecessary in most patients. The writer has never tried to do direct laryngoscopy, bronchoscopy and esophagoscopy without local anesthesia as has recently been advocated by a prominent bronchoscopist. While some patients may tolerate the tubes without anesthesia, the average patient in the average clinic will be more tractable if he realizes that one is doing all he can to prevent pain. And with such a safe anesthetic as alypin, the slight increase in time is a small consideration.

Method of using local anesthetics. Alypin and

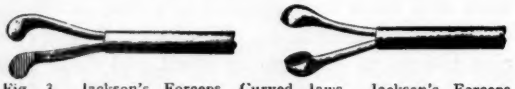

Fig. 3. Jackson's Forceps, Curved Jaws. Jackson's Forceps, Cupped Jaws.

novocain are used in 20 to 30 per cent. solutions. When time is a factor, 30 per cent. solution is used. Usually 20 per cent. solution answers every purpose. With a curved applicator the anesthetic is applied to the pharynx and base of the tongue and to the larynx if possible. After waiting one or two minutes, the direct laryngoscope is passed and the epiglottis pulled forward. Another application is then made directly to the larynx. No effort is made to squeeze the excess of the solution out of the cotton because it does no harm. In a few minutes the larynx is ready for prolonged examination. If the trachea is to be examined, an applicator loaded with 20 per cent. solution is passed down through the laryngoscope to the bifurcation or a 4 per cent. solution is sprayed into the trachea. In esophageal examinations one application of 20 per cent. solution is made. Though alypin has not been tried in children, the writer feels sure that it can be used safely. In some adults enormous doses have been used with no after-effects. When it is necessary to use general anesthesia, ether is preferred. When given warm it probably has no more serious effect upon the lungs than chloroform. A very useful drug to decrease nervousness and irritability, especially if given in full doses a day or so before the examination is bromide of soda. The writer has used it with the greatest success in patients who balked at the first examination. In all tube work under ether it is well to have an oxygen tank in readiness for emergency. In Brunings' work on bronchoscopy there is a table which illustrates so well the more prevalent use of general anesthesia in Europe than in this country that it is well worth inserting in a monograph of this kind. American operators are gradually getting away from general anesthetics as greatly increasing the dangers of tube work. It is the exception that an expert bronchoscopist gives a general anesthetic in examining or operating in the larynx. In esophagoscopy it is certainly the exception unless sharp foreign bodies are to be removed and in bronchoscopy it is being used less and less in children under 6 years of age. Brunings says: "In order to give a true idea of the practical significance of anesthesia when the indications are correct, I insert a small table which shows the frequency of or rarity of their use in the direct examination and operative performances during recent years in Killian's clinic. In judging of these numbers it must be borne in mind that they have reference only to clinical cases. All instances of endoscopy on practised persons and for the purpose of teaching and demonstrating are excluded. On the other hand, in most examinations the duration of the operation has been increased in consequence of demonstrating for doctors or students."

CASE PERCENTAGE OF GENERAL ANESTHESIA.

Nature of examination.	Over 10 Years.	Under 10 Years.	General.
Direct laryngoscopy	0	57	18
Upper tracheoscopy	0	100	4.4
Upper tracheo-bronchoscopy ..	3	100	22
Lower tracheoscopy	0	0	0
Lower tracheo-bronchoscopy ..	?	?	(6)
Direct hypopharynxgoscopy and esophagoscopy	3	90	6.5

"It will be seen from the first vertical percentage column that in the case of adults including children over 10 years of age anesthesia was resorted to very rarely and only for upper tracheo-bronchoscopy and direct esophagoscopy. They were mostly cases of timid children or patients with a lesion which would render examination painful. The middle collection shows that in the case of little chil-

dren—most of them under six—a general anesthetic was almost always used, often indeed, for direct laryngoscopy if a direct operation was intended. It may be taken for granted that the counter-pressure method will permit some restrictions in the use of a general anesthetic even in these cases. . . . The surprising result that the total for direct laryngoscopy shows a considerable percentage of anesthetics is due to the fact that direct inspection in little children is generally the only chance for laryngo-tracheoscopy (difficult decanulation) and laryngeal operations." It is safe to say that such wholesale general anaesthesia in direct laryngoscopy will not be approved of in this country. In direct laryngoscopy in children under 10 years of age no anesthetic, local or general, has been used at the Presbyterian Hospital for some years. In small tumors situated anteriorly on the vocal cords, general anesthesia may be necessary but in all other conditions with the method of examination and treatment to be described no anesthetic is used. If chloroform is used as an

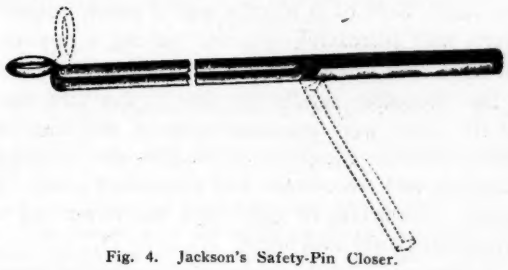

Fig. 4. Jackson's Safety-Pin Closer.

anesthetic, it should be given by an expert since it increases the dangers of tube work.

The inhalation of oxygen is of such importance, it will not be amiss to quote the following from Brunings: "1. Breathing of oxygen not infrequently renders tracheotomy unnecessary in the case of acute obstruction to breathing which may be overcome in a few hours, *e. g.*, laryngeal edema and reactionary swellings. 2. Breathing of oxygen admits of many examinations and operations being performed without tracheotomy, *e. g.*, speculum examinations in serious dyspnea, dilation of laryngeal stenoses, removal of tumors which are causing obstruction. 3. Hurried tracheotomy is unnecessary when oxygen is inhaled and the operation may be performed deliberately and carried out in the best manner. Patients with severe dyspnea are then able to endure the operation easily lying on their back with the head extended. A light, portable oxygen apparatus should be at hand as a first expedient, when urgent tracheotomy is performed at private houses. 4. The endoscopic extraction of foreign bodies which cause obstruction is sometimes only possible with the assistance of oxygen breathing. I remember a case of a movable foreign body (bean) in the trachea occurring in a child who became very cyanosed and cold at the extremities. By the immediate application of oxygen respiration (at first artificial) I was able to bring the child back to a state of eupnea and as soon as the necessary apparatus was provided, the foreign body was removed by upper tracheoscopy. Inhalation of oxygen is of course of great importance in endoscopy for other purposes besides acute cases of foreign bodies. It need only be observed that direct examination has often to be effected with patients whose obstructive breathing has first to be accounted for. If it is also remembered that the introduction of a tube from the mere fact of the unnatural position required, increases any existing dyspnea and that the excitement and reflex coughing greatly intensifies the air hunger, it is not necessary to insist on the utility of the oxygen cylinder in endoscopic examinations. It is self evident that in all cases here mentioned, whenever general anesthesia was necessary, the only kind of anesthesia worth considering was that with chloroform-oxygen. It must, however, be repeated that in cases of serious dyspnea, any kind of anesthesia is contraindicated and generally speaking endoscopy of the air passages when there is shortness of breath presupposes a perfect mastery of endoscopic technic, tracheotomy and the application of oxygen. Threatened collapse may be warded off a long time by the inhalation of oxygen. If however, this expedient is pushed too far, collapse is correspondingly more dangerous."

(*To be continued.*)

Clinical Organization in the Modern Hospital.

What is most characteristically "modern" in the efficient hospital of today (and in this sense hospital efficiency is almost unknown in this country) is a clinical organization so composed as to insure prompt and effectual attention to any disease or combination of diseases that may threaten life or health. The keynote of modern medicine is cooperation. To study the hospital unit, looking neither to the right nor to the left, is to suffer ourselves to be led away from and not toward this vital principle. Hospital planning which ignores the possibilities of cooperative medical practice misses its greatest opportunity.—S. S. Goldwater in *The Modern Hospital.*

A PLEA FOR THE EARLY SURGICAL TREATMENT OF INTUSSUSCEPTION.*

A. R. MATHENY, M.D.,
Surgeon to Pittsburgh Hospital,
Pittsburgh, Pa.

In the treatment of intussusception there are but two available methods: the first by taxis and inflation of the colon either by water or air, with or without an anesthetic; and the second by laparotomy with reduction of the invagination by direct palpation or, if that is impossible, by resection of that portion that is gangrenous or that will evidently become so.

While it would be inadvisable in some instances not to attempt the bloodless method providing the diagnosis be made very early and the case be one of the colic or ileocecal variety, yet the lives of the patients who have come to us for operation, would have been jeopardized by such procedure as, with one exception, plastic exudate had already formed, which precludes reduction without direct palpation of the intestine.

The opponents of operation in this condition will endeavor to show that although by bloodless method the mortality is about 70%, that the operative treatment will give a mortality in all of about 65%. But if one will analyze the latter statistics, he will find that the great majority of fatal cases were cases that required resection of the bowel.

Since 75% of all cases of intussusception occur in the first two years of life, and 50% of this number in the first year, the mortality of resection is readily explained, for the young child will stand lengthy intestinal operations but poorly, and intestinal resection is an extremely severe operation at any age.

To emphasize this point I beg to quote the following statistics of resection for intussusception compiled by Dowd[1], which show the futility of waiting until resection is the only recourse.

In Chubb's Australian series of 127 cases, there were eight resections with one recovery.

In Eccle's St. Bartholomew's Hospital report of 89 cases, there were nine resections with no recovery.

Makin's reports 202 cases with 12 resections, giving two recoveries, both in adults.

Koch and Oerum report in 400 cases in Danish children eight resections with no recovery.

So it is seen that the cases which progress to the condition requiring resection, are practically hopeless.

If the pathology of the condition were but born in mind, the danger of gangrene rapidly ensuing would be evident. The mesenteric vessels are rapidly compressed by the enveloping bowel becoming edematous, converting the neck of the invagination into a constricting ring. Rapidly following, there are adhesions forming between the four or more peritoneal layers involved and finally gangrene of the intestinal walls.

Treves[2] has divided the condition clinically into the (1) ultra acute, (2) acute, (3) sub-acute and (4) chronic. Upon seeing a case, particularly in children, it is obviously impossible to tell without opening the abdomen in which category the case will belong.

To temporize in the acute and ultra-acute types means gangrene, and probably fatal peritonitis.

I have previously reported[3] eight cases of intussusception in children with two deaths: one of which was resected, having gone 72 hours. The other case was an infant of eight days which expired as the incision was made. I have since had two cases, boys of 6 months and 3 years, respectively, with successful outcome; making a total of ten cases with a mortality of two, or 20%.

The favorable results are due to the fact that all the cases were operated upon in the first 10 hours, with the exception of the girl who required resection, and whose case had progressed about 72 hours. The infant of eight days had never had a successful bowel movement.

The youngest of the series of 8 successful cases was 5 weeks, and the oldest 3 years. Of these cases seven were boys.

Koch and Oerum[4] report 400 cases in Danish children in which 60% occurred in the first year; of these two-thirds occurred in the 5th to 7th month. During the second year no more cases occurred than in the 5th and 6th month. The frequency of the condition decreases rapidly with advancing age. The proportion of the boys to girls was 2.2 to 1. They show under the first year that 52% died without operation, and that the operative mortality of the balance was 74%. Upon analyzing their deduction we find that in a vast majority of cases the bloodless method had been tried and they advise such treatment for at least 12 hours.

To the family physician must be given credit for the early or late intereference by the surgeon, for upon his diagnosis rests the proper early treatment.

Too much importance can not be placed on the digital examination of the rectum and bimanual recto-abdominal examination in all cases of acute abdominal pain in children.

*Read before the Allegheny County Medical Society, June, 1913.

Pain has not been a marked symptom in my cases contrary to text-book description.

It might be well at this point to review the classical symptoms.

1. Sudden attack of crying and pain more or less spasmodic.

2. Vomiting, which is uncontrollable.

3. Blood from rectum usually a few hours after onset.

Blood occurs in 80% of cases; and blood on the diaper of a previously healthy child always demands further investigation.

4. Palpation of a tumor of a wandering type or a "uterine cervix"-like mass in the rectum. As 75% of all cases are of the ileocecal type, the mass will be felt most frequently in the right inguinal region.

5. Shock at some time in the history of the case. The prostration is always marked.

In conclusion it is evident that early surgical intervention is the only safeguard against a condition of irreducible intussusception that means practically 100% mortality in infants and children.

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PAIN IN INFANCY AND SENILITY.

The reason why the aged or the infant show but few symptoms of their disease is that there is usually little or no pain and slight, if any, tenderness or muscular rigidity. The reason why there is no pain is that in senility the brain is deteriorated, while in infancy the brain is so undeveloped that the cerebral mechanism of associative memory is inactive; hence, pain and tenderness, which are among the oldest of the associations, are wanting. Senility and infancy are by nature normally narcotized. Senility is passing through the twilight into the night; while infancy is traversing through the dawn into the day.—GEORGE W. CRILE in the *Pennsylvania Medical Journal.*

DIAGNOSIS OF OBSCURE APPENDICITIS

Again and again have I found suspected cases showing none of the usual signs; no tenderness, no referred pains on deep palpation may be elicited in the first examination, but when one repeatedly presses and even rolls the cecum and, presumedly, the appendix, at say, four-hour intervals, and treats the left iliac fossa in precisely the same manner as a control, if there is chronic appendicitis there will usually develop after several vigorous examinations a definite and sometimes a high degree of tenderness in the right fossa, while the left remains negative. I can not overstate the importance of this method. —GEORGE W. CRILE in the *Pennsylvania Medical Journal.*

INJURIES OF THE PERIOSTEUM.

WITH ESPECIAL REFERENCE TO THEIR RELATIONS TO THE PATHOLOGY AND REPAIR OF FRACTURES OF THE BONES.

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Injuries of the periosteal sheath of the bones almost never occur alone. Very rarely, one finds a sub-periosteal hematoma of smaller or larger extent, existing without any other demonstrable lesion in the neighboring tissues, but as a rule, sufficient diligence shows the presence of the results of traumatism in the adjoining bone or muscle.

In the great majority of cases, these injuries are associated with the various varieties of bone fractures; next in order, with contusions and lacerations of the soft parts, either open or subparietal; thirdly, with dislocation of the bones from their normal joint relationships; and lastly, with sprains and contusions of the ligamentous structures of the joint capsule. In those cases where a really careful search fails to disclose any accompanying lesion of the neighboring structures, it is very probably true that some underlying cause, as the undermining results of rickets, scurvy, or hemophilia, has furnished a ready predisposition.

The periosteum is very tough and strong, and forms an enveloping sheath for the many bones of the skeleton. Each individual bone is closely infolded by the periosteum, with the exception of those parts, usually the ends of the bone, that are sheltered in the capsular structures of the joints, within which the bone takes its allotted part. Where the ligamentous structures of the capsule end, and the layers of the periosteum begin, their connective and elastic tissue fibers blend and become continuous with one another, and some of the fibers can be seen also to become prolonged into the hyaline matrix of the articular cartilage covering the ends of the bone.

The periosteum itself is attached to the underlying bone, both by the nutrient small bloodvessels, which it sends downwards into the interior of the bone, and by longer and shorter connective tissue fibers, usually designated as the fibers of Sharpey, which, passing into the osseous tissue, become lost among its lamellae. These together may cause the periosteum to adhere very intimately to the shaft of the bone, as one finds in the vertebrae or at the free ends of the floating ribs; or, on the other hand, they may be very few in number, as in the bones of the vault of the skull, and giving a very indifferent attachment, thus accounting for the ease with which

the periosteum can there be liberated. At certain areas corresponding to the origins and insertions of the muscles, the adhesion of periosteum to bone is especially intimate: here the fibers of the tendons, of the periosteum, and near the articulations, of the joint ligaments, are most closely blended, exceptionally strong, and protrude downwards among the osseous lamellae, for an extraordinary distance, thus affording a very effectual anchorage. This accounts for the fact that fairly often a powerful muscular contraction will tear away a thin shell from the cortex of a bone, causing what has recently been designated a sprain-fracture.

Under the microscope, one distinguishes two layers in the periosteum. The inner layer, more solidly built than the outer, is composed of connective tissue bundles, among which are numerous elastic fibers, these latter also being prolonged into the bone along with Sharpey's fibers. The outer periosteal layer carries a close network of blood-vessels which, with the lymph and nerve plexus, furnishes nourishment to the bone. It is very important that the integrity of the circulation between the periosteum and bone be maintained; otherwise the nutrition of the bone may become insufficient and more or less caries is likely to result. The so-called nutrient artery to the bone, furnishes nourishment chiefly to the bone marrow; its anastomoses with the periosteal circulation are not over-abundant, and the current of blood in each is distinct.

The periosteum covering the bones of the skull is distinguishable by the fact that it is entirely devoid of elastic fibers. This probably accounts for the frequency with which lacerations of the scalp extend down through the periosteum without any fracture of the cranial bones. The absence of any elastic tissue precludes the possibility of sufficient "give" to the pressure of a blow, directed throughout a linear application, and a separation consequently occurs. In these cases, it very frequently happens that a part of the bone exposed in the bottom of the fissure, owing to the impoverishment of the circulation (mention of which has already been made), undergoes cellular death, and delays the healing of the wound until the resulting sequestrum is exfoliated.

Between the bone and the periosteum one can demonstrate microscopically a stratum of large polyhedral or irregularly shaped cells, supported in a loose connective tissue layer. These cells, the so-called osteoblasts, are the progenitors of the bone corpuscles, which are sheltered in the lacunae of the Haversian systems. The osteoblasts have for their function the depositing of a calcareous intercellular substance, the essential constituent of osseous tissue. In their natural development as soon as the osteoblasts are transformed into bone corpuscles, this property becomes latent and can be reawakened only on special occasions, as in the repair of a fracture or the transplantation of a segment of bone. After a bone has reached its mature stage any new formation of bone is accomplished by the osteoblastic layer of the periosteum. Whenever, for one reason or another, the membrane is forcibly separated from the underlying bone, one of three conditions may prevail: first, all of the osteoblasts may cling to the periosteum; secondly, they may all adhere to the bone (and this is very rare); third, and this is the usual condition, most of the bone-forming cells cling to the periosteum, and a few remain attached to the bone. All of these facts are of importance in explaining some of the traumatic and post-traumatic conditions of the periosteum.

Fig. 1.

CONTUSIONS OF THE PERIOSTEUM.

Contusions of this membrane are generally trifling in their extent, although they give, proportionately to their severity, an extraordinary amount of pain. They are most frequently met over the crest of the tibia. Sprains and contusions of the ligamentous structures of the joints are often accomplished by contusions of the periosteum.

HEMATOMA OF THE PERIOSTEUM.

This condition is one frequently met. The bleed-

ing may take place between the outer vascular and the inner fibrous layer, or between the inner fibrous layer and the bone. Only in the latter case is it proper to designate these hemorrhages as subperiosteal, and clinically it is very often impossible to distinguish between the two.

In the first type, hematomata are apt to be larger than in the second but, as a rule, they are very rapidly absorbed. They never leave any permanent swelling or thickening of the bone. They occur most frequently in the long bones of the limbs, and in the bones of the skull, especially the frontal bone. When the hematoma is situated between the inner periosteal layer and the bone, the bleeding is derived from the vessels that perforate the cortex. These hematomata are apt to be small, except when they occur in the skull where, owing to the loose attachment of the pericranium, the bleeding will be limited only by the boundaries of the individual bone, at which the membrane is firmly attached. The hematomata are very slowly absorbed and, as a rule, they leave some permanent mark in a slight thickening of the bone. When their absorption is especially slow, a formation of new bone may increase the resulting thickening.

The cephalhematomata occurring at birth are usually situated close to the interparietal suture, and may be unilateral or bilateral. The extent of the bleeding is limited by the margins of the parietal bones. The bleeding may be subaponeurotic, or subpericranial. These hematomata are very rapidly absorbed, and only in exceptional cases do they leave any permanent mark.

Many of the patients with osteophytic overproduction of bone give a history of some trauma. Usually this history is ignored but a consideration of the trauma as a causal agent in the light of what has just been said, would make it appear not quite as innocent as it would seem.

LACERATIONS OF THE PERIOSTEUM.

Tearing of the periosteum may occur as a subcutaneous injury, or it may be an extension of a laceration of the soft parts. In the latter event, it may or may not communicate with the exterior through a rent in the skin. In the scalp wounds the laceration fairly often extends through the pericranium. An open tear of this nature is very rare in any other location. The common condition is a subcutaneous laceration, and this, of course, always is part of a larger lesion, such as a fracture or a dislocation.

INJURIES OF THE PERIOSTEUM ACCOMPANYING FRACTURES.

Fractures may be classified into groups, according as to whether there is no, little or much displacement. The lesions of the overlying periosteum correspond very closely.

One group includes those fractures that have no displacement: some of these are of the greenstick variety, and some are impacted fractures. One accounts for the absence of displacement, either by an insufficiency of force, or by a very firm attachment of periosteum, fascia, ligament or tendon, which holds the fragments together, and makes fruitless to a large extent the fracturing force. An *x*-ray picture, taken after thorough healing, shows practically no callus. The periosteum is never injured to any great extent; frequently, indeed, it is entirely uninjured. At most, only a slight tear is present. The important fact is that there is a minimum of exposure of the bone-forming cells, and therefore a minimum of callus. The fracture heals, as one might say, by "primary union." These cases include the greenstick fractures of the clavicle, radius and ulna, and some of the complete fractures of the bones of the hands and fingers.

Fig. 2.

The second group includes those fractures with little displacement. I include with these the greenstick fractures of the humerus and femur, and the impacted fractures at the lower end of the radius,

with an angulation of the shaft at the line of fracture. Here the callus formation is of moderate extent. The periosteum may be untorn with some of these fractures, and may be simply loosened from the shaft for a short distance from the line of fracture. A small cavity is thus formed which immediately fills with blood, and the healing here occurs, as it were, by "second intention." By this I mean that the osteoblastic cells, exposed on the periosteum, the surface of the bone, and on its cross section, fill up the space between and around the fragments exactly as granulation tissue fills up a wound in the soft parts. That applies also to the fractures with marked displacement. The periosteum may also be torn with fractures in this group, and the tear may be only on one side as in a green-stick fracture with angulation, or it may be torn all around, as in some of the fibular fractures and in some of the spiral fractures of the tibia. In some of the last group, the line of division of the periosteum may be at a different level from that in the bone, and the loose ends of the membrane may slip in between the fragments and delay the healing. The amount of callus is, as I have said, never very great.

I have frequently seen surgeons, while operating for fracture, define the periosteal flaps, and if these protruded between the fragments, cut them off flush with the ends. I believe that every bit of periosteum should be saved, however badly torn, and if, in order to obtain good apposition, it is found necessary to reset the ends, the section should be done subperiosteally.

The third group takes in all the fractures with much displacement, including those with marked separation in the axis of the bone and limb, those with marked angular and lateral displacement, and those with overriding; also many of the compound fractures, the gunshot fractures with comminution, and some of the sprain-fractures. They include especially, the fractures of the long bones of the arm and thigh, simultaneous fractures of both bones of the forearm and leg, and fractures in the neighborhood of the elbow and knee.

Whenever there is marked displacement, one never finds an intact periosteum. The tearing may correspond closely with the lines of fracture or, exactly reproducing them, it may be at a different level. The laceration may be circular or oblique, or it may follow the axis of the bone or limb. There may be more than one longitudinal tear, and if the periosteum is ripped away from the bone for a considerable distance, the membrane may hang in strips. The stripping up of the periosteum may be excessive, and may cause the baring of a considerable part of the shaft of the bone, and thus impoverishing its blood supply, may lead to caries.

The laceration in the periosteum, whether longitudinal, oblique, or transverse, may not extend completely around its circumference. It may reach merely half or two-thirds of that distance, and leave a periosteal bridge which, forming a physical connection between the two fragments, will have a strong bearing in the healing of the fracture. There may be simply a rent in the periosteum, through which the ends of one or both fragments protrude more or less completely. When this condition is at its maximum, the healing will progress very slowly, there may be faulty or non-union, and an open operation will frequently be necessary. These fractures often show a marked degree of overriding. The amount of callus that forms, it goes without saying, is always excessive.

Probably the most frequent condition of the periosteum accompanying fracture, is one in which the periosteum is torn for only part of its circumference, leaving a bridge of membrane connecting the two fragments. The bridge itself may have an additional rent in it, or the fragments may be connected by several strips of periosteum at opposite points of the bone circumference.

If we take it for granted that the individual fracture has been treated with the best of skill, and reduction and immobilization have been carried out as nearly perfectly as human hands can, the effectiveness and rapidity of repair will depend to the largest extent on the condition of the periosteum. To be sure, the bone corpuscles exposed on the free section of the fracture, under the powerful stimulus of the reparative process, will call up their latent property of depositing osseous material but, as a rule, the total formation of callus from this source is very little, when compared with that formed by the periosteal osteoblastic layer.

The quickest and best healing is obtained when the fragments can be brought into good alignment and maintained in that position. Here the periosteum, however badly torn, is brought into closest relation with its appropriate segment of bone, the space between the fragments is practically nil, and the repair implies the least amount of work. When the fracture is complete, the callus, small in amount, will be uniformly disposed around the circumference of the bone; when the fracture is incomplete, the thickening will be still less, and limited to one aspect of the bone.

In those fractures with angular displacement, the convexity of the angle marks the area where the periosteum has been torn; the concavity, the area where a periosteal bridge is forming a physical con-

nection between the fragments. There is usually present on this side more or less stripping up of the periosteum. When allowed to heal in this position, callus forms between the bared bone and the stripped-up periosteum, in the concavity of the angulation, between the fractured ends, and to a much less extent on the convexity of the deformity. The periosteal bridge insures healing. If not corrected, deformity results, and if this be not excessive, a perfectly useful limb results. This variety is most apt to occur in the humerus and femur.

Figure 1 demonstrates the value of the periosteal bridge in the healing of a fracture with angular deformity. The periosteum can be seen stretching unbroken between the fragments, on the concave side of the fracture. Callus has filled the recess between the bared shaft and the loosened periosteum, and has filled the gap between the fractured ends. There is practically no callus on the convexity. Here the periosteum is completely torn. Although there is some deformity, the boy has a perfectly functionating arm. Case No. 900, series of 1913.

The periosteal injuries with fractures showing a lateral displacement are very similar to those with angular deformity. The periosteal connecting link may be single or multiple. However, just as frequently the periosteum is completely torn. If some part of the surfaces of the fractured ends are in contact, healing will be rapid, callus moderate in amount, and the final deformity very little. But if the lateral displacement is extreme, and the fragments are not in contact, repair will be slow, and the amount of callus and deformity excessive; or, in rare cases, there will be fibrous union or no union.

Fractures with separation in the axis of the bone and limb are notoriously slow in healing. This is accounted for by the fact that the periosteum is completely severed, and without some kind of a connection between the fragments, the bone finds great difficulty in bridging the gap. This variety is most common in the patella and os calcis.

When one of the fragments is disproportionately small, and consists of a thin cortical shell, corresponding to the insertion of a powerful tendon, such as the tendo Achilles or the patellar tendon, the condition has been called a sprain-fracture. It is almost unknown to obtain true bony union with fractures of this kind; one considers oneself fortunate, when a strong and effectual fibrous union is obtained. Even when a fresh fracture of this kind is treated by open operation, and the fragments are fastened together, the healing is by scar tissue only.

A middle aged woman came to the clinic, with the story that she had fallen down a flight of steps. An *x*-ray picture showed a sprain-fracture of the os calcis. Operation was refused. Several months later, the *x*-ray demonstrated that there was no bony repair, although in walking only a slight limp was discernible, and the patient could rise on her toes to an appreciable extent. (Fig. 2.) Case No. 971, series of 1913.

Fractures with overriding are common in the long bones of the extremeties. The extent of the shortening varies. The periosteum is never intact, and the tearing may follow any of the lines of laceration described above. Healing is very slow, the amount of callus excessive, the deformity marked. Fibrous union or pseudarthrosis may result, and non-union is common if the shortening be not overcome. The ends of the fragments, bared of periosteum, may protrude through rents in the tube of periosteum which bridges the gap. The overriding may be accompanied by lateral, angular, or rotary displacement, and then the tearing of the periosteum is very irregular. When properly treated, healing should be obtained. There may be more or less deformity and thickening of the bone, but a useful limb should result.

Fig. 3.

Excessive baring of the shaft of the bone, on either side of the line of fracture, caused by a stripping up of the periosteum, is especially common with all compound fractures. This fact should

be given its due importance, in accounting for the frequent occurrence of necrosis of the fractured ends. The impoverishment of the blood supply, which occurs when the integrity of the periosteal circulation is disturbed, is amply sufficient to cause the death of the bone cells. This of course, is aided to a large extent by the addition from without of pyogenic organisms. I have seen this same necrosis occur in a simple fracture.

A young boy sustained a fracture of his radius. There was absolutely no wound of the skin. When the cast was removed, a sinus was disclosed, which lead to carious bone. There is no doubt in my mind that the shaft of the bone was denuded of its periosteum for a considerable distance. Case No. 1825, series of 1913.

INJURIES OF THE PERIOSTEUM WITH DISLOCATIONS.

Injuries of the periosteum accompanying dislocation are infrequent, and almost invariably they consist of a separation of the membrane from the underlying bone. As the head of the bone is forced through the joint capsule, it not infrequently strips away the periosteum from the bone, where the capsule blends with it, before the tear in the capsule itself is accomplished. When the dislocation is reduced the periosteum may return to its normal relation to the bone and, becoming agglutinated to it, may cause no trouble. Or, a formation of callus may take place between the bone and the periosteum, which, if it attain sufficient magnitude will be an insuperable obstacle to the proper performance of the joint movements.

A truck driver sustained a backward dislocation of both bones of the forearm. An enormous hematoma was present, and the ligaments were badly torn. At the end of a month, motion in the elbow joint was much restricted, and an *x*-ray photograph (Fig. 3) demonstrated a large mass of callus on the outer and ventral aspect of the humerus, extending upwards from the margin of the capsular attachment, which prevented any flexion beyond a right angle. Case No. 438, series of 1912.

No referata are given for the references to these conditions are few, and are found as very short remarks in a few of the very many articles written on associated lesions. The standard text-books provide very little. Bardenhauer's book is an exception. The greater part of this paper is based upon my own observations in the clinic.

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Surgical Technique and Infection.

The surgeon is no longer one who operates, no longer one who cuts vessels and ties them again; he is the one who can array the numerous factors that go to make recoveries, failures or deaths in such a way as to give the best results with the least risk, —W. A. Bryan in *The Southern Practitioner.*

SOME PRACTICAL NOTES IN SURGICAL PHYSICAL DIAGNOSIS.*

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ABDOMINAL PALPATION.

Skilful and intelligent palpation is of inestimable value in surgical work.

I am convinced that the physician often fails in his abdominal and vaginal examinations to secure as satisfactory results from palpation as he might if he were to insist upon better relaxation of the abdominal walls on the part of the patient. The first step in the routine palpation should be directed to the state of the abdominal muscles, and no sudden or painful manipulation should be made until, after coaching the patient in letting his muscles relax, one has secured his complete confidence and co-operation in procuring the best possible degree of flaccidity of the abdominal walls. Then, and not until then, may attention be directed to the condition of the internal organs, insisting at all times throughout the examination upon this relaxation. Oftentimes the findings, which are perfectly plain under these conditions, may otherwise be difficult or impossible to detect, as for example; the moderate grades of local rigidity of the abdominal walls, small or deep seated abdominal growths, enlarged gall-bladder, etc.; and in the bimanual vaginal examinations, the detection of the fundus of the uterus, the ovaries, the outlines of growths in the pelvis, their degree of mobility, etc.

It is common practice to have the patient flex the knees for abdominal examinations, but as a rule I find that this entails some muscular tension on the part of the patient, and that better relaxation can be had with the limbs flat on the bed or table.

KIDNEY PALPATION.

A floating kidney will sometimes fail to be detected by the usual examination in the dorsal position, but may be readily identified if the patient is turned over so as to lie on the side opposite to that of the examination, with the thighs slightly flexed, or if he is placed in the sitting posture with the body inclined forward and the elbows resting upon a table to secure abdominal relaxation. The explanation of this rests in the fact that at times the kidney is so placed in its bed that it must first be displaced inward and forward before it can descend.

COSTAL ARCH RIGIDITY.

The value of the information received through

*Read before the Aesculapian Society of the Wabash Valley, May 28, 1913.

the act of compressing the costal arches and the lower ribs is a point that is not generally recognized. With the flat of the hand placed over the costal arches, one on each side, alternate compression and relaxation are symmetrically made, noting the comparative degree of resistance to the act on the two sides. Normally the resistance is greater on the right side on account of the liver. Undue resistance will be noted on one side, however, in enlargements, growths, or exudates of the liver, stomach, spleen, etc. Resistance plus tenderness will be noted in inflammatory conditions, as subdiaphragmatic abscess, abscess of the liver or the spleen, etc. Traumatic rupture of the liver or the spleen will give tenderness, with or without resistance.

LOCALIZED TENDERNESS. "PENCIL" TENDERNESS.

In estimating the condition of localized tenderness in surgery, there is a very simple procedure by which these examinations may be made to elicit very much more definite information than can be had by the usual pressure of the hands or the fingers. The method is so simple and so accurate in the detection and the clear cut localization of the tenderness, that it is a surprise to me that it is not described in the text-books and that it has not become a part of the routine method of surgical examinations in general practice. All that is required for this examination is a common lead pencil with a rubber eraser at the end. The examination is made by placing the pencil perpendicular to the part to be examined, with the rubber end in contact with the skin when, after gaining the patient's confidence and co-operation in announcing the degree of pain on pressure, the pencil is firmly pressed down upon the point of contact. A point a quarter or a half an inch from this spot is next examined with the same amount of pressure, and the comparative degree of tenderness elicited is noted. This is repeated at various points covering, in a more or less symmetrical manner, the entire area of the sensitive region. The distinctness with which the outlines of a true surgical local tenderness can be mapped out and limited by this method will be a revelation to those who have never applied the test. For example, a tenderness in appendicitis which by palpation is located over an area of say 2″ x 4″ may, by this means, be distinctly localized to an area of about 1″ x 2″. Not only are the limits of the pathology thus more clearly defined, but the contrast between the sensitive and the normal areas is very much accentuated by this test. In other words, the sum total of the tenderness found on palpation always consists, to a certain extent and sometimes to a large extent, of the pain induced by the displacement or the crowding of the surrounding organs or tissues against the point of disease, or of the sensitiveness due to the manipulation of the overlying soft parts. The tenderness from these factors is reduced to a minimum in the examination by this method. If a contused extremity be grasped and squeezed in the full hand, considerable pain will be induced, whereas, local pressure of the pencil, even though it be sunk deeply into the contused area, will, on account of the absence of the tissue crowding, produce practically no pain. If, however, in pressing over a contused area, the pencil comes down upon the line of a fracture of a bone, or upon the point of rupture of a ligament, very decided and definitely localized tenderness will at once be evident.

The practical application of this "Pencil Tenderness Examination" finds its most valuable use in the early detection of appendicitis, at the time when it is most important and most difficult to differentiate a simple bowel disturbance from a beginning appendicitis. The indefinite sensitiveness here, under the pencil test, seems to disappear in the former case, and to become concentrated at the appendix in the latter.

Not only is the detection of doubtful fractures greatly facilitated, but the actual line of the fracture can often be very clearly demonstrated by this test. For fractures of the small or the superficial bones it is desirable to cut the rubber end into a flattened edge for more definite localization. The differentiation between a ruptured ligament and a simple strain of a joint will usually be very evident on the application of this test, as will also the differentiation of simple contusions of the scalp from those accompanied with fracture of the skull.

AUSCULTATION OF FRACTURES.

The examination of fractures by auscultation of the bones is a point of limited utility, possibly, still it is one that has distinct merit in the detection of fractures, as well as in the determination of the state of progress that is being made in the healing of a fracture. With the stethoscope placed over one end of the bone and a tuning fork over the other, the sound vibrations will be transmitted to the ear in normal bones and in bones in which osseous union has occurred following a fracture. These sounds will, of course, not be heard if the bone is the seat of a fracture that has not yet united. The clavicle is peculiarly located so that this test may be utilized without the aid of the tuning fork. On placing the stethoscope over the acromial process of the clavicle very distinct bron-

chial breathing is to be heard normally. If the clavicle becomes fractured these breath sounds disappear from that side, and when bony union has been established they will again appear.

This test, where applicable, may well be used as a routine observation in the healing of fractures, as the sound conduction will return, if progressing satisfactorily, long before one would care to risk the manual test for false motion. In the case of the clavicle the beginning return of the breath sounds may be heard as early as two weeks, from which time on they usually increase to the normal at the fourth or fifth week.

JOINT PALPATION.

In the examination of surgical conditions of the joints it is of the utmost value in the symmetrical palpation of the bony relations, to keep the joint gently rocking back and forth, through passive flexion and extension, or rotation, as the case may be, throughout the examination.

WHAT ARE CONTRAINDICATIONS TO THE OPERATION FOR THE RADICAL CURE OF GASTRIC CANCER?

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At the present day most lay people are cognizant of the utter futility of the medical treatment of malignancy; and when one considers the enormous prevalency of cancer and the appalling frequency with which the gastro-intestinal tract, particularly the stomach, is affected, we naturally conclude that some more decisive and helpful means must be employed to reduce the very large mortality.

Today we have but one such help more reliable than any other and that is surgery. When surgery is mentioned, however, I wish to emphasize the choice of the surgeon, because the operation for a radical cure is dependent upon good judgment and good technic.

It will indeed be utopian when the surgeon can be dispensed with and the cure left to the successful employment of sera or other chemical methods, but up to the present we have nothing short of surgery to attempt a radical cure. Having made a probable diagnosis of malignancy by the employment of all the diagnostic methods at our disposal, the patient must be persuaded to consent to immediate operation provided there are no contraindications.

Wm. Mayo says, "From my experience cancer, as cancer in the stomach, does not produce symptoms upon which an early diagnosis can be made. Only when its situation makes a palpable tumor mass or produces obstruction can a probable diagnosis be established."

We have at times seen patients who present almost every symptom with the exception of a palpable tumor, whom we morally feel have malignant disease and should be immediately explored. Such patients many of us persuade to be operated upon. There are always some colleagues who are extremely hard to convince and who absolutely refuse until they can palpate a mass, which by that time may be of considerable size and may have already formed metastases so that a radical cure is improbable. It is fortunate that the latter type of physician is diminishing in number owing to the assistance derived from the Roentgen ray examination.

When we consider the contraindications to an operation for the radical cure we find that there are but few, namely, a diagnosis made late in the disease; the presence of metastases or extension into neighboring organs; marked debility of the patient; the presence of some accompanying severe organic disease, *e. g.*, of the heart, arteries, kidneys or lungs; some marked constitutional disease, as diabetes mellitus.

Heretofore the finding of a tumor indicated an inoperable condition; this is a mistaken idea. The size of a tumor is less important than is the presence of adhesions. I daresay there are many surgeons who can recall some cases in whom at operation very extensive infiltration was found, the tumor mass and glands were excised and the patients continued to live for several years afterwards, apparently well.

It was my good fortune last winter to see in Vienna a patient from the Hochenegg clinic, seventy-two years of age, upon whom fourteen years previously a complete gastrectomy was performed for malignancy. It was indeed a pleasure to see the patient, the excised stomach and the radiographic pictures of the present esophageo-intestinal union.

One of the large bugbears in considering operation is the condition of the lymphatics. Mayo lays particular stress on this when he says that "the physiologic function of the lymphatics is a most important factor in relation to the radical cure of carcinoma. The stomach is generously supplied with lymphatics and gives the smallest percentage of radical cures. The pyloric segment has nine-tenths of all the lymphatics of the stomach."

Enlarged lymph nodes will be found in a high

percentage of cases but they are not always malignant. Mayo advocates that "when the disease in the stomach is mechanically removable and infected glands exist that are not removable, a resection should be done if the patient is in fair condition. It gives such patients generally some comfort for one to two years. Moderate involvement of the pancreas does not preclude operation."

The assertion recently made by some clinicians that the presence of lactic acid was a contraindication to the operation for a radical cure is in all probability going a little too far and it should be ignored. Experience has taught us otherwise.

The presence of a more or less continuous fever serves for some as a contraindication. The temperature curve may show marked irregularity, in other cases it may assume an intermittent character. The rise of temperature in malignancy may be due to toxic absorption or it may indicate the presence of complications.

From October 1, 1897, to October 1, 1912, the Mayos performed 1,498 operations for carcinoma of the gastro intestinal tract, of which 996 involved the stomach. Of these 996 it was possible to do the radical operation in only 344, or 34.5%. Taking into consideration that the initial recoveries, according to Mayo, are in the vicinity of 90% and that these patients are given a chance of permanent cure approximating 25%, it seems incumbent upon us all to make every effort toward an early diagnosis and immediate operation.

Weil in a reference stated that at the Breslau surgical clinic, 157 resections were performed during the last five and one-half years, of which 135 were for carcinoma. Of the 101 who survived the operation and its sequences, 40 are still living, in some of whom the operation was done more than five years previously.

The patient in whom a cancer of the stomach has been diagnosed, should not be treated with pessimism and skepticism as to the result from an operative interference, for one is occasionally very agreeably disappointed. Every operation for cancer of the stomach always begins as an exploration inasmuch as all gastric cancers present features of uncertainty until the abdomen is opened; for only then is it possible to decide whether the operation to be employed is for a palliative or curative purpose.

Every patient should be given a chance since cancer of the stomach is recognized as a disease which in the present state of our knowledge is only remediable by early removal. Delay in establishing a diagnosis and delay in surgical interference serve as very strong contraindications to the operation for a radical cure.

BISMUTH PASTE AS A PRIMARY DRESSING FOR SKIN GRAFTS, AND IN THE TREATMENT OF BURNS AND GRANULATING WOUNDS.

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The multiplicity of dressings for skin grafts tends to prove that our results, either immediate or remote, are not entirely satisfactory and leave much to be desired in comfort to the patient, in celerity of healing and, eventually, in the viability and pliability of the scar.

In this age of promiscuous surgery, the personal equation becomes a strong factor. The tyro does not hesitate to attempt the simple (sic) operation of extensive skin grafting with the only too frequent result of merely increasing the patient's suffering by giving him an additional disabling wound of the thigh, or of such other part of the body from which the graft was removed. Let us omit any mention of the mental and physical distress of the friend or relative who so nobly, and uselessly, plays the part of donor.

An ideal dressing for Thiersch skin graft should satisfy certain requirements, namely:

(1) Secure splinting of the graft to its new bed.
(2) Elimination of surface exudation or its rapid removal.
(3) Stimulation of epithelial proliferation.
(4) Comfort.

The more popular forms of dressings satisfy some of these qualifications, but each has objectionable features which nullify, to a great extent, its own peculiar advantages.

Rubber tissue has long ruled as favorite, and in expert hands, it proves very effective. Success is due more to the clever cutting of the grafts and to good technic, however, than to the dressing itself. This also holds true in all other forms, for no dressing has as yet been devised which is absolutely "fool proof." The objections to rubber tissue are apparent. Even with drainage holes provided, the excretions are dammed back so that the newly implanted graft is either floated away from the surface, or else becomes macerated leaving few, if any, surviving cells.

Dry gauze is objectionable, for the graft tends to cling to its meshes rather than to the underlying

surface, and is apt to be removed in toto at the first dressing. To overcome this defect the gauze has been applied damp and kept in this condition by constantly wetting with salt solution. This requires a great deal of attention, and if, perchance, the under surface does become dry, failure results. Moreover, too assiduous wetting causes maceration.

Granting the advantages of the open air method under ideal conditions, the objectionable features are many. Primarily, the grafts are apt to be disturbed during the restlessness of the patient while recovering from the anesthetic. Subsequently the exudations become dried and caked, covering the surface with an unsightly mass, beneath which increasing excretions are endeavoring to find avenues of escape,—a mass most difficult to remove, of offensive odor, and far from conducive to the comfort of the patient, whose well being we particularly desire. A carefully constructed screen must also be used to protect the wound from contamination by flies and dust.

Having experienced these disadvantages, and in the hope that I may offer a solution to some of them, I shall briefly review the ideal technic of skin grafting by the Thiersch method, and submit a dressing which has given such complete satisfaction over a period of more than two years that I now depend upon it entirely.

As it is essential, or at least most desirable, that the body forces should be at their best, we should not attempt to skin-graft a patient debilitated by long confinement in bed, necessitated by the original burn or injury. Suitable hygienic and dietetic measures should be employed until his physical condition is comparatively restored. During this time especial attention should be paid to the wounded area so that the granulations may become strong and healthy. On the night before operation the thighs are thoroughly cleansed and dressed with sterile towels. Under the anesthetic the wounded area and the thighs should again be cleansed with very hot salt solution. As it is most important that no antiseptic solution be brought in contact with the body of the patient, the hands of the operator or assistants, it is a wise precaution to have all such solutions removed from the room. The exuberant granulations are now removed with a dull curette or the surface freshened by vigorous rubbing with dry gauze until there is free bleeding. The area is then covered with a towel, wrung out of very hot salt solution. This is kept in place, to be removed only as the grafts are transferred from the thigh. These grafts should be so thin as to be translucent. The tendency to cut them too thick may be partially obviated by using a regular heavy skin-graft razor, which is flat on the under surface and concave on the upper. By a quick, sawing motion the desired graft is removed, leaving an area dotted with pinpoint bleeding, which will heal promptly and does not incapacitate the leg. The grafts thus obtained are laid evenly upon the granulating surface, underlying blood and air bubbles being carefully removed, and then pressed firmly into place by means of a gauze sponge wrung out of hot salt solution. The dressing is then prepared and applied in the following manner:

Strips of gauze, six to eight layers in thickness, are thoroughly impregnated and *buttered* with sterile 33 1/3% bismuth paste (Beck's paste). These are laid directly over the newly implanted

Fig. 1. Appearance of grafts three weeks after operation.

grafts, smoothly and in order, extending for two or more inches beyond the area of the wound. No wrinkles or folds should be permitted to remain. Over these there is placed a layer of absorbent cotton, and the whole dressing held firmly in place by a roller bandage.

The first dressing should be done on the fifth day and at this time, especially, does success depend upon the skill and care exercised in the removal of the primary dressing. A similar dressing is reapplied and subsequent dressings done on every third or fourth day as the case requires. At about the fifth dressing one is able to peel from each graft a thin film of dead cuticle, leaving a firm, pink healthy graft in position, whose edges are already rapidly advancing to join those of its neighbors.

The advantages of this dressing may be best

appreciated by trial. In my opinion, it approaches more closely to the ideal than any other form. The grafts are held firmly in place; exudation becomes almost negligible; there is stimulation of the proliferation of the epithelium, not only from the edges but also from the deeper surface, that exceeds by far the effect produced by Scarlet R. and lastly the patient expresses a sense of comfort frequently absent in the other types. The resultant scar is soft and pliable, and shows no tendency to break down. The accompanying illustrations represent the first case on which I tried this method over two years ago. Although a very intractable boy, who made no attempt to forward efforts on his behalf, but who, on the contrary, retarded every endeavor directed toward his recovery, the results in his case

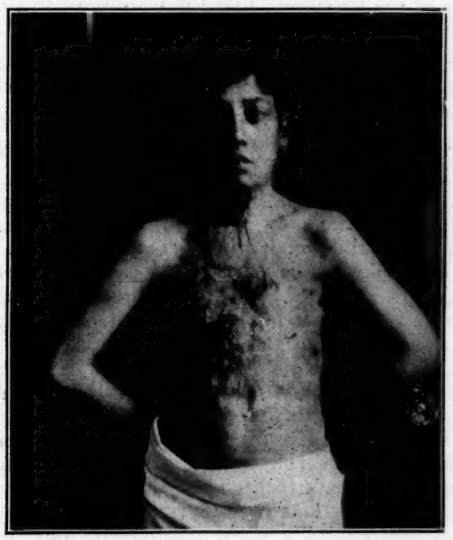

Fig. 2. Seven weeks later. Contracting bands on throat cut and foreskin implanted in left angle.

were so eminently satisfactory, that I have clung to this procedure to the exclusion of all others.

The boy received his burn on November 9, 1910. While playing about a bonfire one of his playmates threw a can of gasoline over him and pushed him into the fire. He lay in the hospital betwixt life and death for seven months. The burn extended from his chin to below the umbilicus, involving two-thirds of the circumference of his body. He was being treated by an open air method and the stench was intolerable. When the piled up crusts were removed with olive oil, his screams disturbed the entire ward. My first efforts when I took charge of him were directed toward increasing his bodily resistance and to get the wound in condition for grafting. On June 5, 1911, I did the first operation, using as a dressing both rubber tissue and wet gauze. At first all appeared favorable as the grafts had taken well, but gradually they "evaporated" leaving the wound as extensive as in the beginning.

It was during this interval that I began to use bismuth paste as a dressing for the granulating wound. Immediately the whole area changed for the better. The abundant exudations diminished rapidly, the granulations became firm and healthy, and the sourrounding edges began to advance. This may be observed in illustration No. 1, particularly at the lower border of the wound. I then decided to graft again, using bismuth paste as a primary dressing. The result was as I have previously described. Illustration No. 1 shows how the grafts appeared three weeks later. It may be observed that although the grafts were originally separated by an inch or more, in many places they have already fused, either with their neighbors or with some part of the surrounding border. Their healthy pink color and their thickness cannot be well appreciated from the picture. The second illustration shows the condition seven weeks later, after the contracting bands in the neck had been cut and his own foreskin had been implanted in the left angle.

The action of bismuth paste, when used in the treatment of this large granulating surface, was so noticeably beneficial that I have since used it as a routine measure in all granulating wounds. I use it as a primary dressing in burns, when it is not possible to follow Rovsing's method, and always as a secondary dressing. Its action is mildly antiseptic and astringent and in cases where I have used it in conjunction with Scarlet R. on the same patient it excels the latter in the stimulation of the growth of epithelium.

55 East 61st Street.

TO PREVENT TETANUS INFECTION.

The first and most important lesson which both physician and layman must learn is to open widely all wounds of the kind which could have carried dirt from the surface into the deeper parts. We should not content ourselves with cleansing or disinfecting the surface around the point of entrance of the blank cartridge, nail, etc. This will do no good whatsoever. The germ of tetanus grows best in closed cavities and we must open the door widely and remove all of the foreign material and sloughs. —DANIEL EISENDRATH in *The Chicago Medical Recorder.*

REPORT OF CASES ILLUSTRATING INTRACRANIAL COMPLICATIONS IN PURULENT MIDDLE EAR DISEASE.

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The great importance of these complications, and with the high mortality following them, is my reason for publishing the following case reports.

The intracranial complications of purulent middle ear disease are thrombosis of the sigmoid sinus, epidural abscess, suppurative labyrinthitis, meningitis, and cerebral or cerebellar abscess.

Case I:—Miss A. M., 13 years of age, contracted influenza two weeks ago; four days ago her left ear became painful, a day later a bloody discharge from that ear appeared spontaneously, which became sero-purulent within a day. When I saw her for the first time on May 5, 1909, she suffered from a typical purulent otitis media of the left ear, the drum being perforated in the posterior lower quadrant and not bulging to any extent. No pain on pressure over antrum or mastoid tip. Temperature and pulse normal. At the same time she had symptoms of an acute rhinitis and pharyngitis, no sign of accessory sinus suppuration.

May 22nd, 1909. Ear is practically dry, perforation had not closed yet, pharynx still looked congested.

May 30th, I was called to her home where she gave the following history. For two days she had had headache, had vomited a few times, and felt somewhat drowsy. The discharge had reappeared to a slight extent; drum not bulging; upper posterior meatus not edematous. Mastoid bone painful on pressure. Pulse 108, temperature 103.5°.

She was transferred immediately to the German Hospital where I did a mastoidectomy at 1 A. M., May 31st. The operation disclosed an acute ostitis, the bone bleeding very freely, but no pus.

The sinus was slightly exposed and looked normal. The temperature dropped immediately to 99.2° and rose within the next twelve hours to 105.6°. For the next five days the fever curve ranged between 101.5° and about 104°. The Widal reaction was negative. The differential blood count showed on June 5th, w. b. c., 18,700, poly 92%; small lympho., 8%. June 6th, w. b. c., 19,500, poly 88%, small lympho, 8%. June 7th, w. b. c., 18,800, poly 70%. Small lympho. 12%.

Spleen slightly enlarged. No chills, no sweats, no headache, no vomiting, no Babinski and slight Kernig reaction, no opisthotonos. Labyrinth functionating.

On the afternoon of June 7th I explored the wound by exposing the dura in the middle fossa, which looked absolutely normal and not bulging. I exposed the sinus from the region of the bulb upward for about one inch. It looked absolutely sound and felt normal, and after compression filled right up again. After the operation the temperature rose to 106°, and after ranged between 102° and a little above 104°, the pulse being a little more frequent. There were none of the classical signs of meningitis. On the afternoon of June 9th, she vomited some yellow matter, on the 10th she became slightly delirious and vomited a few times; on the 11th she became comatose with tetanoid motions. Lumbar puncture showed fluid under slight pressure, slightly turbid, containing pneumococci. Lumbar puncture was repeated the next day. On the 13th the patient died.

Autopsy:—Brain shows a fibro-purulent meningitis near the bone, some pus in the meshes of the pia, dura not very distended. Mastoid wound looks healthy. Sinus filled with a post-mortem clot. Frontal sinus contains a little muco-purulent secretion.

The question of the relationship of the meningitis to the acute ear infection remains unanswered, as there is the possibility that the meningitis might be simply an independent complication of the same infection. There is also the possibility that the infection might have come from the frontal sinus or the nose. In future in a questionable case, I shall make an early lumbar puncture for diagnostic and prognostic purposes.

Case II:—B. M., 22 years of age, hatmaker, without inherited or acquired disease; suffered since early childhood from a discharge from the left ear, following as nearly as he can remember an attack of influenza. For six months he felt a fullness in the left half of his head, accompanied occasionally by pain and slight vertigo. He was treated for some time in a dispensary where he got only very slight and temporary relief.

On October 17th, he came to the dispensary of the Har Moriah Hospital. He had then a decided diminution of hearing in that ear. Conversational voice heard at six feet. The caloric test showed a reasonable functionating labyrinth. There was no nystagmus, except a slight spontaneous one, when looking toward the affected ear.

Examination of the left ear shows a large fibrous polyp filling the whole meatus, so as to prevent a more detailed examination of the middle ear; therefore, I removed the polypus with a small ring knife, bearing in mind that such polypi are often attached to the dura in the presence of a defect in the tegmen tympani. I did not use a snare as I should have had to pull rather forcefully on account of the firmness of the polypus. The removal of the growth was accompanied by copious bleeding, therefore I inserted a tampon of sterile gauze and examined him the next day after removing the blood clot under sterile conditions without washing. I found that the drum had disappeared with the exception of a part of the membrana flaccida. There was no trace of the ossicles, the rest of the polyp being attached somewhere in the attic. Patient felt very much relieved until the night of October 10th, when he felt chilly, vomited, and had an agonizing frontal headache. When he was brought to the hospital, he had a temperature of

101.5°, frontal headache, nausea, vertigo, slight stiffness of the muscles of the neck, Babinski and Kernig signs doubtful; spontaneous nystagmus not present. Lumbar puncture done immediately. The fluid was turbid and under pressure. A smear was negative.

The fluid was reported by the Rockefeller Institute as sterile, containing 89% of polynuclear leucocytes. One hour after reception the patient had a chill and his temperature went up to 103°. The same night 15 cc. of spinal fluid were removed by lumbar puncture and the same amount of Flexner serum injected. On October 23rd 30 cc. of fluid were withdrawn and the same amount of Flexner serum injected. As the patient now developed the typical Babinski and Kernig signs, and opisthotonos, and his pulse was very slow, 30 cc. were again removed at midnight. On October 24th, the temperature still ranged between 101° and 102.5°; his meningeal symptoms slightly improved. On October 25th, 30 cc. were removed again, the fluid much clearer and under less pressure. A blood culture was negative.

On November 6th the patient being in good condition I performed a radical operation (Schwartze-Stacke) to remove the cause of his meningitis. I found the bone driven into the region of the tegmen tympani up to the dura, which was covered with granulations which bled so freely that I had to use adrenalin to control this. After the operation all the symptoms of meningitis disappeared rapidly and the patient was discharged, the ear still showing some purulent discharge from the region of the junction of the tympanum and antrum.

Three months later the patient returned to the hospital after an attack of grippe with a severe headache and slight fever. The ear was still discharging, showing the bacillus proteus. Mastoid not painful. Differential blood count shows a gradual increase of the leucocytes and polynuclears. After a lumbar puncture, which was dry, the patient had a chill and after that a decided septic temperature with a chill every other day. Caloric test absent on the affected side. Lumbar puncture shows almost pure pus. Two days later, exposure of labyrinth revealed a fistula in the horizontal canal. No discharge of fluid or pus. The patient died three days afterward with symptoms of diffuse purulent meningitis.

As an autopsy could not be obtained, we have to try to explain the case by its clinical symptoms. In all probability the patient developed, after the removal of the polyp, a circumscribed labyrinthitis, producing a toxic meningitis by osmosis of the toxemia through the dura. After the subsidence of acute symptoms, the suppurative labyrinthitis continued and later caused a diffuse purulent meningitis, but as I did not find pus in the labyrinth at the time of the second operation, this explanation may not suffice. Another possibility is that the symptoms of meningitis were the initial stage of a beginning brain abscess which, after the disappearance of the acute symptoms continued in the latent stage, without much pressure symptoms, and started to cause symptoms again, when it broke into the ventricle and caused a general diffuse purulent meningitis.

CASE III:—Mr. A. M., 45 years of age, married, insurance inspector of the State of New York. Gives no important data in his family history. Had the usual diseases of childhood. When five years old, scarlatina complicated by some affection of the left ear, which discharged pus ever since. At no time did he receive any treatment for this affection. I saw him for the first time in the last week of October, 1909. He complained then of a slight dizziness and an occasional headache on that side. Temperature and pulse normal. No spontaneous nystagmus. Labyrinth responds normally to caloric tests; hearing somewhat diminished. Inspection shows a drum with a large marginal perforation, granulations protruding through the defect in the drum interfering with drainage. The granulations shrunk under treatment; his headache and dizziness disappeared. In spite of treatment the symptoms recurred about the end of November. On December 4th he took a trip to the seashore on a rainy day, and on his return trip felt thoroughly chilled and experienced a sudden boring pain in his left temporal region. He immediately came to me. I could not find anything out of the ordinary and prescribed aspirin with instructions to keep me informed about his condition. I did not hear from him for four days. I was then called by his family physician, who had been treating him for an attack of grippe. He gave me the following history.

The patient had a chill the preceding night, the temperature going up to 102°, by mouth. He had vomited a few times and felt dizzy, seems to lose his memory and complains of a diffuse headache. When I saw him he looked rather sick, his tongue very much coated. Reflexes normal, no nystagmus, caloric tests show a functionating labyrinth, so does the turning test. There is no localized tenderness on percussion of his head. When showing him objects he thinks a little while before naming them; once in a while he makes a mistake but corrects himself immediately. Inspection of the ear shows a gray exudate covering the granulations, due to an acute infection. I suggested a blood count and suggested the possibility of an epidural or cerebral abscess. The next few days the doctor notified me of a general improvement in the symptoms of the patient. But four days later the temperature went up again to 102° and the patient became slightly delirious. When I saw him at that time he had practically the same symptoms as on my last visit, but I found a complete aphasia. He called nearly every object shown to him, water. I insisted on an immediate blood count which was done by Dr. L. Heitzman and showed 34,000 w. b. c. and 88% polys.

Diagnosis of temporo-sphenoidal abscess with a meningeal involvement was made, and after consultation with Dr. F. Whiting, who confirmed the diagnosis, the patient was removed to the German Hospital, where I operated upon him December 14th. I did first a typical Schwartze-Stacke operation. I found pus squirting from the region of the tegmen antri and, when the dura was exposed—

pus rolled out from the epidural space. I then removed a piece of bone as large as a 25 cent piece from the squamous portion of the temporal bone, one shank of the bone forceps in the cranial cavity, the other in the mastoid process. After the removal of the tegmen tympani I saw in that location a gangrenous spot in the dura through which a few drops of pus followed. A knife pushed into the brain for about 3½ cm. did not increase the flow of pus, but when a needle was pushed in the pus began to pulsate out. A flat draining forceps was inserted alongside the needle, the fistula dilated, and a rubber tube inserted for drainage. The pus contained bacilli proteus. The operation lasted 1½ hours, the patient rallied well and for five days the temperature ranged between 100° and 101.5°, his aphasia persisted but headache disappeared. Blood count showed 36,000 w. b. c., 82% polys.

On the 6th day, when I changed the dressing it was apparent that he had a gravitation abscess in the neck. This was incised and drained. After that the polynuclears were 78%. The brain wound still discharged pus and macerated brain tissue. The patient gradually became more and more apathetic; a facial paralysis developed on the opposite side. In spite of repeated attempts I could not locate a secondary abscess, and on the 12th day the patient became comatose and died, with all the clinical symptoms of meningitis. Unfortunately I did not succeed in getting permission for a post-mortem examination.

At the time I saw the patient in October, when he complained of headache and slight dizziness, he was in all probability suffering from an epidural abscess.

On December 4th, when he had the chill and sudden pain the pia mater became involved and became adherent to the dura and the pus broke into the brain. In other words he then had meningeal symptoms of the initial stage of brain abscess. The secondary stage lasted only a few days, when the third stage with posture symptoms made its appearance. The high blood current and the temperature showed that there was a co-existing meningitis, which made the prognosis in this case very unfavorable from the beginning.

CASE IV:—M. R., 43 years of age, seen in my office November 10th, 1910, gives the following history: About two weeks before he had pain in his left ear, which had previously been opened somewhere else. Ever since his ear feels full and he cannot hear the ticking of the watch and whispering. The drum looks purplish and thickened and is retracted. Catheterization gave him immediate relief and improved his hearing.

December 7th, the same condition still persists; treatment gives but very temporary relief.

December 13th, he returns stating that after some pain in the ears he noticed a slight discharge which comes from a small perforation in the anterior lower quadrant.

December 18th, ear is dry.

December 28th, he returns complaining of severe pain in the ear which has persisted now for three days. Temperature 100.4°. Drum swollen and edematous. Enlargement of the paracentesis opening.

December 29th, temperature 103° after a slight chill, unbearable headache; pain on pressure over mastoid. He is transferred to the German Hospital for examination. Temperature rises during the night to 105.4°. Differential blood count shows 18,000 w. b. c. and 82 polys.

December 30th, mastoid inspection discloses very little at fault in the mastoid process, sinus is explored and found normal. Dura is explored and found normal. Nothing found to explain the high temperature.

December 31st, after operation temperature falls to 100.2° and rises in the evening to 101.2°; some vomiting, pulse only 72 and slightly irregular.

January 1st, patient still vomits, temperature practically normal. After that he feels better, complains still of some headache.

After five days wound is dressed and seemed to be in good condition. He leaves the hospital on January 2nd, to be treated at home.

January 18th, while in my office, he points to a glass and asks for a drink of water; he cannot name the glass. There is still some discharge of pus from the aditus and antrum. He is put to bed and watched for a few days, during which time the aphasia disappears. Wound still shows a discharge from the aditus.

February 13th, he has a recurrence of his aphasia with a decided headache.

Examination at that time shows:

Amnesia aphasia: words are heard and understood. Words are seen and understood. He does not write well at dictation, but copies properly. Reading is poor. He shows therefore amnesia-aphasia, some degree of agraphia, some degree of alexia.

Diagnosis of abscess of temporo-sphenoidal lobe was made and as the symptoms seemed to depend on the amount of pus draining through the aditus, and that amount being too great at times to come only from the tympanum, I made the diagnosis of a temporo-sphenoidal abscess draining through the tegmen tympani.

February 14th, patient returned to the hospital where a blood count showed only 9,600 leucocytes, 78% polys.

February 15th, operation. Old wound curetted, tympanum exposed according to the Schwartze-Stacke, tegmen tympani curetted away, showing a fistula leading into the brain through which about one ounce of foul pus oozed out; broad bladed forceps inserted and fistula dilated. The former median incision is now extended curving around the upper insertion of the auricle, a piece of bone is now chiseled out of the squamous portion of the temporal bone, the exposed dura is incised by a cross incision and the brain incised until the knife meets the probe in the abscess cavity, which has been entered from the tympanal side. An iodoform gauze drainage inserted.

The patient's condition for the next two days was fair, then his temperature went up to about 104°; blood count 20,000, 90% poly. Lumbar

puncture shows turbid fluid. Cultures show bacillus pyogenes longus lanceolatus. Patient died February 18th. Temperature 106.5°.

The high temperature which induced me to do the first operation, and repeated vomiting and decided headaches are very likely to be symptoms of the initial stage of the developing brain abscess. It would have been perhaps wiser to go into the tympanum at the time when I did not find an explanation for the clinical symptoms during the mastoid operation. The patient then entered upon the latent stage of the abscess, which lasted sixteen days, after that he gave the first signs of the tertiary stage by aphasia, which was observed through the fact that the free drainage of the abscess through the tympanum caused at times complete disappearance of the symptoms. He finally died of a purulent meningitis. The blood count was interesting as it shows how little absorption takes place in the brain itself, first being almost normal; when the meninges are involved it shows the immense number of white blood cells and poverty of the polys. The blood count is therefore of a decided prognostic and diagnostic value.

CASE V:—P. B., Austrian, workingman, age 37. Underwent elsewhere an intracranial operation about the 15th of November. Two days later pain in his left ear; a day after appearance of pain, paracentesis. On December he appears well with only a moderate discharge from the ear.

December 4th, temperature goes up to 104°, he complains of a headache on the left side. No nystagmus, opisthotonos, no Kernig. No mastoid tenderness. Perforation in the lower posterior quadrant of the drum, through which a slight discharge of pus (not much pressure) can be seen. There is no sinking of the upper posterior meatus.

December 6th, a differential blood count shows 15,800 w. b. c. 90% poly. Temperature down to 100.5° in the morning. At three P. M. 102.6°.

December 7th, pain in right knee. Temperature up to 106°. Mastoid operation, sinus exposed and immediate bleeding from both sides.

December 9th, aspiration of knee joint shows pus cavity; streptococcus. Temperature up to 104°. Knee joint washed with subnitrate. Patient working. He continues in same condition up to December 21st. A blood culture at that time shows streptococcæmia. He developed now a melanosis in right infrascapular region. Sinus is now exposed almost down to the bulb; still bleeding from above. After careful removal of clot from below some purulent material exudes from the region of the bulb. Previous to manipulation of the sinus I had ligated the internal jugular, which was perfectly sound and not thrombosed. In spite of my efforts his general condition continued unfavorable.

On December 24th, I lifted the upper end of the ligated jugular into the wound, removing clots and introducing a soft rubber tube into the vein, for better drainage; the same is done from above pushing a soft rubber tube almost into the bulb, washing through the bulb from above.

December 28th, blood culture still persists. Mastoid normal, and sinus looks well. Knee aspirated again; it contained six ounces of pus. Patient became delirious and died on December 29th.

CASE VI:—Clara F., 48 years of age, widow, had an attack of grippe Dec. 16th; four days later pain in right ear.

On Dec. 26th, I saw her for the first time, found an acute purulent otitis media; paracentesis done immediately.

January 7th, 12 days later she presented herself in my office with a temperature of 101.5° and a history of two chills within the last three days. Pain on pressure over antrum and tip. Proper drainage of bone pus.

January 8th, mastoid operation. Bone bleeds properly, no free pus in cells on antrum.

January 9th, temperature around 100° in the evening. Following a chill temperature went up to 105.2°. Blood culture tube shows after 36 hours streptococcus. Differential blood count 22,000, polys 87%. Exposure of sinus from knee to knee, careful incision of bulbar end results in free bleeding from below, no bleeding from above, where the sinus wall is of a dirty grayish color; exposure of the sinus further back until it looks normal; splitting of the sinus results in a sudden gush of blood. Jugular vein is ligated and found not to be thrombosed.

January 13th, face on the side of jugular ligation swollen and cyanotic, patient rather restless and not quite rational.

January 14th, temperature up to almost 104°, blood cultures still positive; differential blood count 20,000 whites, 75% poly. Dressing removed, shows the neck wound clean. Sinus incision closed; in an attempt to reopen it free hemorrhage from above.

January 16th, temperature up to 103°.

January 17th, temperature ranges from 100.2° to 100.8°. Blood culture is now negative.

January 27th, temperature ranges around 100°, patient doing well; shows a slight exophthalmos on the ligated side. Patient discharged as cured after two months. Cyanosis and exophthalmos have disappeared.

57 W. 90TH ST.

PREPARATION FOR LAPAROTOMY.

It is a mistake to diet a patient too severely. Many a naturally strong patient has been so strictly dieted and so severely purged before operation as to be brought to the operating-table almost on the verge of collapse. The patient should be allowed to eat almost *ad libitum* up to and including the evening meal the day before the operation. A moderate dose of castor oil or liquid albolin given the night before and a properly given enema—preferably of soap suds—ought to be sufficient to put the bowels in proper condition.—THOMAS B. EASTMAN, in *The Journal of the Indiana State Medical Association.*

MILITARY SURGERY.

GUSTAVUS M. BLECH.
CHICAGO.

GUNSHOT WOUNDS OF THE CHEST.

Of greatest practical interest to us appears the region of the chest, not so much because it contains organs of vital importance—lungs, heart, large blood vessel, mediastinum, esophagus—but for the fact that, aside from the immediately fatal injuries, wounds logically should place the recipient hors de combat, produce no important symptoms, at least not at once, so that the patient labors under an illusion of a slight injury, while in reality he is but entering the road of serious disease if not of permanent invalidism.

For this reason it is imperative that each surgeon, including those in civil life, should be thoroughly familiar with the immediate and remote effects of wounds of pleura, lung and esophagus, and know what can and should be done to achieve the best possible therapeutic results.

The *soft parts* of the chest, when injured without involvement of deeper structures, irrespective by what kind of missile produced, require no other treatment than that which has been prescribed for soft parts elsewhere, for these wounds do not especially differ from like injuries elsewhere, the control of hemorrhage and the prevention of infection by the application of a regulation dressing is all that is required.

Hemorrhage of the intercostal vessels, though it is difficult to conceive an injury of these vessels without involvement of one or more ribs if not the lung itself, requires more energetic treatment. At the frontal aid stations, when time is pressing and dressing material limited, simple firm tamponade will be all that can be done. But whenever possible—and this is very often to be the case at the dressing stations proper—tamponade after the method of Langenbeck still remains the most efficient means of controlling this troublesome form of hemorrhage.

This method, briefly, is as follows:

A square piece of gauze is pushed into the wound by means of an artery or dressing forceps. If the pleura has been opened by the bullet the dressing *should be pushed about half an inch beyond the* pleura in the direction of the lung. The front part of the gauze dressing is kept open—spread out—and a few strips of gauze (the ordinary sterile bandages found in military outfits will prove admirable for this purpose) are forced into the gauze pouch. Taking a hold now of the pouch and gently but firmly pulling it outward, pressure is obtained from within outward, somewhat on the same principle as when we attempt to arrest post-nasal hemorrhage by forcing a tampon into the posterior nare by traction on the tampon placed in the pharynx by means of a tied string that has been led out through the outerior nare. And just as we often compress the nasal passage also anteriorly counter pressure from without can be produced against the intercostal space either by folding the free ends of the gauze drssings and fastning over it other dressings or a piece of cotton, or, better still, by tying these ends over a piece of gauze.

The same treatment is applicable for hemorrhage of the internal mammary artery.

The *ribs* can experience in modern warfare the entire gamut of injuries described in the general part, from mere contusion to great loss of substance. While a rib may be fractured without necessarily involving the lung proper or even the pleura —a missile may strike the rib at its utmost lateral portion and thus only "graze" the pleura—usually pleura and lung will be involved, and the extent of this involvement will depend on the missile. It requires no great stretch of imagination to realize that the comparatively small wound of the infantry bullet will not produce the serious effects that will be observed in shrapnel or shell-splinter wounds. While in the latter, pneumothorax and collapse of the lung are inevitable, the former may not have enough immediate effect on the wounded man to cause him to seek medical aid.

For the present it will suffice to point out that fractured ribs must be treated in the field the same as in civil life—by immobilization through circular bandaging, adhesive strips, etc. When bandages or adhesive strips happen to be absent recourse must be had to improvisation. The belt of the injured soldier will prove an excellent substitute, at least until such a time as technically better dressings can be used.

The *lungs,* when pierced by small-caliber jacketed missiles, as a rule prove benign and early recovery can be anticipated. The same holds good also for the *bronchi.* Of course, vessels may be injured and produce a hemothorax.

Other missiles produce serious results. Many deaths on the battlefield are due to injuries by shrapnel, and the opening of the bronchi by missiles of large caliber almost invariably is followed by emphysema, which in turn may produce death by asphyxia.

A hemothorax may become absorbed, as can a pneumothorax, again infection may result and then we can observe the typical pictures of empyema, abscess and gangrene of the lung. It has happened

that such an infection has produced fatal secondary hemorrhages. Undoubtedly in such cases the pulmonary vessels have been primarily injured but not enough to cause serious results. Total solution of continuity by an infection will, therefore, kill where the vessels partially escaped the original trauma.

Patients suffering from wounds of the lung *with prolapse of lung tissue,* should be dressed only after the prolapsed portion of the lung has been fixed to the external wound orifice (skin) by a few sutures (silk).

Injuries of the *esophagus* can be diagnosed at the front only with a degree of probability. Nor is it of great importance that such a diagnosis be made, if this rule be observed: *In which there is even the least suspicion that the esophagus may have been involved not a particle of food nor a drop of water should be given by mouth.* It is only by following this rule that many a life will be saved while the non-observance of such a precaution may lead to death. Morphine. Dressing.

Injuries of the *heart,* if not immediately fatal, require rest and morphine at the front.

The above brief remarks apply, of course, merely to stations in front of the field hospital. Whether the patient be treated at the aid station or the dressing station, the treatment on the whole remains the same.

Tracheotomy for a threatening asphyxia due to emphysema may have to be performed at either of these stations. This will become imperative if some time has elapsed since receipt of the wound and the field hospital is situated at some distance. If the patient is found soon after injury the latter circumstance will not interfere with transportation for it takes some time for the emphysema to assume a dangerous aspect.

As regards injuries of the heart rest and morphine are our mainstays. But suture of the heart should be undertaken.

This, however, is a formidable operation, and should be undertaken only by surgeons of great manual dexterity, though it cannot be said that the technic of the operation is especially difficult—an argument to show that medical officers accompanying regiments or attached to ambulance companies *should be well trained surgeons.*

We may now proceed to glance at the therapeutic opportunities at the *field hospitals.*

Gunshot wounds of the lung, find here an opportunity for rest and morphine. If within a few days effusions do not become resorbed, and produce compression symptoms—aspiration is our remedy par excellence.

The following rules must be observed. Never aspirate through the wound, but insert the needle in the usual manner and place (6th intercostal space—axillary line). Never aspirate more than 100 ccm. of the effused blood. If either the syringe or the clinical phenomena show that we have to deal with an empyema resection of a rib is indicated. This can be performed under local analgesia.

(*To be continued.*)

A THEORY OF CANCER—SUPERFECUNDATION BY SPERMATOZOA.

There is no doubt that to whatever agency the limitless growing tendency of malignant tumors may be due, the cells are imbued, as is evidenced in their every essential with a life force the parallel of which can only be seen in early embryonal life. The "spark of life," highest at the inception of the fecundated ovum, as is shown by the great mitosis, gradually wanes as life progresses. When we therefore meet with malignant growths, here is again a rejuvenation of cell energy—a renewed *vis à tergo,* which is confined not to all the tissues, but to individual types and subtypes of specific genera of tissues. . . . . It is known that the spermatozoon is markedly attracted to the ovum (chemotaxis). Since this is a fact is it not possible that another supermatozoon, under certain favorable conditions may enter and cause fecundation of a part of an already impregnated ovum; and, depending upon the time of the life of the impregnated ovum, inversely as the cells are differentiated, when certain forms of monstrosities are produced; and, extending down unto the time when the cells are completely differentiated, when we may have simply fecundated completely differentiated cells, or the beginning of so-called malignant growths. Such a process might be possible at any phase of life—from earliest embryonal to post-fetal existence. Such fecundation may remain dormant, and grow at a later stage in life.—MOSES THORNER in the *Indianapolis Medical Journal.*

ANESTHESIA IN THYROID SURGERY.

The dangers of thyroid surgery relating to anesthesia, infection, hemorrhage and shock have been reduced to a parity with those connected with any *other major surgical operation. Discussions* concerning anesthesia reveal the fact that in the great goitre clinics of this country and Europe the mortality rate is about the same whether the anesthesia be local or general. These are dangers incident to any major surgical procedure and not peculiar to thyroid surgery.—J. M. BATCHELOR in the *New Orleans Medical and Surgical Journal.*

Surgical Sociology

FIRST AID IN THE INDUSTRIAL FIELD.*

MAJOR CHARLES LYNCH, U. S. A.,
In Charge First Aid Department, Red Cross.
WASHINGTON, D. C.

While all in attendance at this meeting are doubtless well aware of the present death and disability rates from accident in this country, in the interest of full discussion of the subject which is assigned to me it will perhaps be desirable to say a few words on this matter. A brief statement of the American National Red Cross First Aid Department will therefore be quoted:

> Accidents are constantly assuming more importance in the life of our nation. In the registration area of the United States comprising 58.3 per cent. of the total population, the statistics of the Census Bureau for the year 1910 (those last published) show, exclusive of suicide, 48,606 deaths from violence. These 48,606 deaths made a death rate of 90.3 per 100,000 estimated population for 1910, as compared with 43,627, or a rate of 85.8 in 1909. Since 1880 in the registration area in the United States deaths from accidents have increased 47.7 per cent., while in the same period deaths from tuberculosis have decreased 48 per cent. A very conservative estimate of the non-fatal accidents which resulted in incapacity for work in the United States each year is 500,000. And at least 2,000,000 accidents which cause temporary disability occur yearly. These figures, large as they are, do not begin to represent the percentage of accidents in some of the industries of the United States. For example, among railroad employees and miners, between 20 and 30 years of age, more than 60 per cent. of all deaths are due to accidents.
>
> Deaths from accidents differ, too, from those which occur from disease. Accidental deaths are largely among the very best of our population. The suddenness and unexpectedness of such deaths and of injuries are peculiarly horrifying. Not only does the injured person suffer greatly in accidents, but in case of permanent disability or death, his family deprived of the support of the breadwinner continues to suffer. Thousands of such families become a charge on public and private charity yearly.
>
> Reckoning the wage earning capacity of the average person killed or incapacitated by accident yearly at but $500.00, we have an economic loss of $250,000,000.00 per year. To this should be added the millions paid out in damage suits and legal expenses, as well as the expense involved in the surgical care of injured. The loss involved to those who are not permanently separated from their work and are put to additional expense through accident should also be added in calculating the cost of accidents.

The condition being as represented, it is rather remarkable that greater efforts have not been made to correct it. Typhoid fever as a cause of death does not compare with accidents in importance, yet the work done to prevent typhoid has been many times greater than that expended to prevent accidents and the bad results of accidents.

It rather seems as though we must have assumed a wrong attitude on this question. Have we not been in the same position as the ignorant in respect to disease? That is to say, have we not ascribed too much to act of God in relation to accidents and the results of accidents? These in great measure go hand in hand, as will be explained later. Certainly physicians have not taken the lead here as they have in the prevention of disease, yet there is plenty of room for services which they alone can render.

All honor is due to those who have made our industries less dangerous through the installation of safety appliances. Last summer in Germany I was filled with admiration at the Museum of Sanitation and Safety in Charlottenburg. We have our own museum in this city, which is well worthy of a visit, and many of the large corporations have outfitted their plants with safety apparatus in a manner that could not be excelled anywhere. It might be well to mention, however, that the German museum is a government institution, and the apparatus exhibited there is made up of models to which all must conform. This would appear to be a much better plan than ours, by which the installation of safety appliances is voluntary. Certainly the State should be empowered to make regulations which will insure maximum safety to its industrial workers. This is a measure of self-protection, if nothing else. Our country cannot afford to lose its vigorous manhood at the rate that they are being lost in certain of our industries at present. Not that it is claimed that safety appliances will prevent all this loss, for, as will be stated at once, this is not the case. But, on the other hand, their importance must not be overlooked.

Now, just what are the facts in respect to the importance of safety appliances? One of the most competent observers connected with a company which operates mills and mines on an enormous scale, and which, moreover, has been among the foremost in installing safety appliances, says not more than 30 per cent. of accidents can be prevented by such appliances. No one, so far as I know,

*Read by title at the 22d Annual Meeting of the New York and New England Association of Railway Surgeons.

claims that 50 per cent. of accidents can be prevented by safety appliances. The following figures are also frequently quoted: 33 1/3 per cent. go to risks of employment, 33 1/3 per cent. go to the negligence of the employer, and 33 1/3 per cent. to the negligence of the employee. It is at least evident that the human element enters into the cause of a very large percentage of accidents.

When the American Red Cross inaugurated its first aid campaign only a few years ago, while it had prevention as well as emergency treatment of accidents in mind—in fact, so far as I know, our little first aid textbook was the first book of this character in which much attention had been given to prevention of accidents—yet how important this might prove in a campaign of this character was not fully appreciated. Now, we have had the experience again and again that our instructed first aid men in mines are much less liable to accidents than other miners working under exactly similar conditions. That is to say, instruction in first aid to the injured has an important effect on the minds of men receiving it, which makes them more careful. Acting on this very valuable lesson, we are now devoting more and more time to teaching prevention. Toward this first aid is tending, just as truly as medicine is so tending in respect to disease. In fact, first aid is all prevention; first, it tends to prevent the accident; second, if an accident occurs, it prevents the worst results of the accident.

Probably most practical benefits will come from what I have to say if I tell just what the First Aid Department of the American Red Cross has done in the three years that it has been actively at work. It is to be understood that a great part of this work has been in the industrial field, where it is undoubtedly most needed. First, a strong committee was organized with representatives of both capital and labor interests as well as others to whom first aid was particularly important and who had special knowledge of this subject. Some of the members of the committee were and are: Mr. Julius Kruttschnitt, of the Union Pacific; Mr. Carl Scholz, of the Rock Island; Mr. John Hays Hammond, Mr. John Mitchell, Mr. W. G. Lee, Dr. J. A. Holmes, Director of the Bureau of Mines, Dr. D. G. Tolman, representing the Museum of Sanitation and Safety; and Dr. M. J. Shields, of the Red Cross. Without going into details, besides the central office in Washington we now have three physicians constantly on the road. Dr. M. J. Shields, a pioneer in first aid instruction in the anthracite regions of Pennsylvania, is the dean of this small corps, which will be increased as funds become available. Physicians on their employment are sent to Dr. Shields, and by him are given special instruction in how to teach first aid and accident prevention. This is not as easy as it sounds; because a man is a physician it is by no means certain that he will prove a good first aid instructor. Too many stones are perhaps always cast at the recent graduate in medicine, but as a matter of fact he is perhaps least fitted to shine as a first aid instructor. He has been filled with scientific terms during his entire medical course, and when he is given an opportunity by the cork being taken out of the bottle he shoots all the long words of which he is capable at the dumbfounded first aid student. Moreover, as I have seen it in first aid instruction, there is also a tendency to teach too much anatomy and too little practical first aid. As a matter of fact, very little knowledge of anatomy is required to give good first aid treatment. On the other hand, theoretical knowledge is of little value to the first aid man. He must have the opportunity to actually demonstrate on the subject all the lessons set him by his teacher.

Lest it be thought that the Red Cross is unappreciative of the assistance its first aid department has gotten from the medical profession, I want to say right here that this is not the fact. We realize if it had not been for the assistance of the many doctors who have generously and freely taught Red Cross first aid classes that our campaign in this direction must have been a failure at the start.

Two of our physicians are constantly at work on our first aid cars. One, Dr. Shields, usually takes up accident prevention and first aid instruction for certain corporations or in certain districts. In such cases an attempt is made to give a complete course after working out a plan for an efficient emergency service. There seems to be an increasing demand for this work, and doubtless in the future the large corporations at least will pay as much attention to this method of gaining efficiency as they have already done in other directions. The larger corporations almost always desire to pay for work of this character. This naturally is acceptable to us, as through such contributions we are able to carry our work further in districts where payment cannot be expected.

Our cars have been mentioned above. We now have one car working in the East and one in the West. Our practice is to arrange with the railroad company concerned to pay all expenses involved in the transportation of the car. We pay the internal expenses, including the salaries of a physician and a porter, who also acts as cook. The interests of the railroad are, of course, considered first in the car campaign, though when no railroad engagements have to be met, lectures are given in towns

where stops are made. As a matter of fact, we are able to meet the demands for many such lectures. Our practice on the railroads is to arrange an itinerary and send out advance notices. Stops are made at the more important points where the maximum number of men can be gathered together. The number differs, from one very important cause: Some roads give their employees the time to attend the lectures, and others require that the men stand the necessary expense themselves. The former method is, of course, much better in respect to efficiency. This work, if it is worth doing at all, is worth doing well, and the small cost of giving time to employees should, it is believed, be a just charge against the company concerned. In view of the fact that in certain mining districts we have been able to reduce disbursements of benefit associations one-half through first aid instruction, it is apparent that the company should receive more than the value of this small expenditure in increased efficiency.

We have really covered practically the entire country by our cars, except New England. Of course, we do not anticipate that we are going to teach any one all the first aid one needs to know in our railroad course. It will be necessary for the surgeons of the roads to carry on this work if notable success is to be attained. For example, on the D., L. & W., Dr. Wainwright has a splendid system for first aid instruction.

In a little over three years our doctors have traveled some 150,000 miles and have given more or less instruction to about 250,000 people. It has been said that "a little knowledge is a dangerous thing," and no doubt this is true. I am sure that any first aid courses should begin with the statement that it is just as necessary to know what *not* to do as what to do, but I am equally sure that if one demonstrates the treatment of the commonest injuries to railroad men or to anybody else, that if they encounter such injuries themselves much better care will be given than if no instruction had been afforded. Besides the work of our own physicians, backed up, as I have stated, by numerous doctors throughout the country, we are affiliated with the Y. M. C. A., the Y. W. C. A., the Boy Scouts, the Bureau of Mines, and the First Aid Society of New York City. Through these agencies we manage to reach a good many thousand people every year. With the Y. M. C. A. and Y. W. C. A. and the Boy Scouts we act as first aid representative. With the two former we issue a joint certificate. With the Bureau of Mines we are not doing as much work as was formerly the case. A satisfactory method could easily be worked out, but it would be very expensive if all the mines were to be reached, and this is the reason why more has not been done. Of course, this does not mean that we do not reach many mines every year, for this is not the case. I think first aid is more appreciated in the mining regions than anywhere else, and we try to give as much attention as possible to miners. In the First Aid Society of New York we have members on the Board of Directors, and have conducted a campaign there recently to try to teach first aid in the industries of New York. This, I regret to say, has not met with notable success, and has been abandoned for the present. This raises rather an interesting question in regard to emergency treatment in cities. While I do not believe that first aid can be very satisfactorily taught in many industrial establishments in a city, I think that we are still very lacking in the proper organization for emergency care of ill and injured in all large municipalities. The small first aid stations which I saw in Berlin this summer impressed me very favorably. Of course, there the matter of their support is very easily provided for through the workingmen's insurance. In Berlin in case of injury the person immediately goes to one of these stations and has his wound properly dressed; then, if necessary, he can return to the station for redressing. Now, what happens in most of our large stations? If a person is so seriously injured that it is necessary to take him to the hospital, he of course receives good care; but, on the contrary, if his injury is comparatively slight, he probably receives no care at all until later the seriousness of his condition may bring him to the hospital. If we are going to prevent deaths from accident, it seems to me essential that we should take the facts which have just been recited into careful account.

In the course of our first aid work we have found it necessary to organize a supply department. This started with some simple first aid books which I wrote and in some of which I collaborated with Dr. Shields. One of these books, by the way, has been translated into Slovak, Polish, Lithuanian, Italian, Portuguese, Spanish and Chinese, which would rather indicate that there is still some demand for first aid literature, notwithstanding the cheerfulness with which many physicians absolutely without experience in first aid have written books on this subject. Later we found it essential to supply certain teaching material, such as charts, bandages, splints, etc., for practice, and still later we went into first aid supplies. We did not do this without some hesitation, but it seemed absolutely essential to the efficiency of the First Aid Department. If one goes to a manufacturing concern and

has nothing to present but a scheme of instruction, one is just about in the position of the doctor who endeavors to treat the ordinary patient without drugs. On the contrary, if one has everything which a business concern wants, he has opened up the easiest line of resistance to it. Moreover, we consider it essential that the public be protected in some manner from inefficient first aid materials. I could name certain concerns which, by accepting the lowest bids on first aid packages, have gotten material that I would defy the most skillful surgeon to use without infecting the wound, much less the first aid man. The manner of preparing the first aid dressing is, of course, extremely important. It cannot perhaps be foolproof, but it can at least be so made that the surface which will touch the wound cannot be contaminated without gross carelessness. I want to invite your attention to the first aid packet of the American Red Cross, in which the compress is sewed to the center of the bandage, which can be opened so that the compress will fall away from the hands and will not be contaminated. I want to assert most strongly at this point that my experience would absolutely prohibit me from advocating washing the wound by a first aid man. Nothing is gained by such a procedure, and a great deal of harm may be done. I firmly believe that a first aid dressing well applied is where first aid should stop. Going further, you get into the domain of the surgeon, may injure the patient and lay any company by which he is employed liable for damages.

All of our first aid courses must be given by duly qualified physicians, and at the end of the course we provide for an examination by a physician other than the teacher of the class. A certificate is granted to successful candidates at said examination. We expect any instructor in our classes to follow our course of instruction. Not that we do not welcome suggestions at all times, but our experience has been that for industrial workers, at least, one plan of instruction must be followed, or dire confusion will result. We supply the instructor with a complimentary copy of our text book, and advise all the members of the class to procure such books. If they can also afford the charts and the instruction outfit, it is highly desirable that they should procure them. The matter of compensation of the instructor and examiner must be arranged by the class. We make no charge except for the materials, which are sold at cost, but 25 cents is asked for each candidate examined, in order to pay the necessary expenses to us. An advanced examination can be arranged one year after the first examination. This is intended to keep up interest in the subject of first aid, and is wholly practical.

As a further encouragement to first aid instruction we have held numerous contests throughout the country. At some of these 70,000 men have been represented by teams. At the mine safety demonstration in Pittsburgh, Pa., we had forty teams from every mining district. The contests are followed with the keenest interest in the mining regions. We offer cups, medals, certificates, and sometimes first aid boxes. The struggle for the prizes is more acute than at an athletic contest.

We also offer small money prizes for the best first aid work done during the year. We have a special fund for railroads, which is called the "William Howard Taft Fund." Other prizes of this class are provided by the Red Cross. This is only the second year we have had these prizes, and last year but few contestants appeared. This year, however, a great many affidavits have been received in our office.

We have also gone into the moving picture business. Through the courtesy of the Edison Company we have a moving picture film which is lent here and there on request. This has been done without charge, but on account of the frequent demands I think we will be compelled to secure something, so that we may procure other pictures of the same character. I wish, as soon as I can, to get small moving picture films for the cars. These, of course, would command a large audience at all the smaller places where they stop.

There are some further details of our work which time forbids me to mention. I have already mentioned a plan followed by the Lackawanna which seems to me to be the ideal one; that is to say, I think the best results will be obtained if we make a car campaign over a railroad and then follow it up by lectures and demonstrations by local surgeons. It seems to me that the railroad company should compensate such surgeons for the time they devote to such instruction. Of course, it is as obvious that it does not make the slightest difference how perfect the hospital system of the railroad is, and how many emergency stations it has, that there is still room for knowledge of first aid. Accidents will not occur on the steps of the hospital or in front of the emergency stations, but many of them will take place miles away from other succor than that of a comrade.

Do not be in a hurry to incise multiple, red, painful nodules in and under the skin of the legs —it may be erythema nodosum.—BERNAY'S *Golden Rules of Surgery.*

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WALTER M. BRICKNER, M.D., Editor

NEW YORK, FEBRUARY, 1914.

GWATHMEY'S OIL-ETHER RECTAL ANESTHESIA.

The administration of ether vapor by rectum, for surgical narcosis, which at one time was thoroughly studied, never acquired general recognition and has, indeed, fallen quite into disuse. This was largely because of the severe proctitis that so often resulted. To obviate this and retain the advantages of anesthesia by this route, Gwathmey (*N. Y. Medical Journal,* December 6, 1913), has devised a simple method by which he introduces into the rectum liquid ether in which is mixed (dissolved) a quantity of olive oil varying inversely with the patient's age. The dose is regulated according to the age and weight of the patient. In children below six years of age a 50% solution is employed. It is increased in strength in older patients, and above the age of 15 years a 75% mixture is employed. As a general rule, about one ounce of the mixture is given for every 20 pounds of weight. The preparation of the patient is the same as for any operation, emphasis being laid upon thorough cleansing of the rectum. The mixture is poured into the rectum very slowly; through a catheter and funnel; about five minutes is consumed in pouring in eight ounces, the amount usually required. Anesthesia begins in about five to twenty minutes. If cyanosis or embarrassed respiration ensues, which are signs of an overdose, it is merely necessary to evacuate some or all of the mixture. After the operation, the rectum is washed out and some olive oil is poured in.

Gwathmey presents the advantages of this method as follow:

1. The element of apprehension and fear caused by placing a mask over the face in inhalation anesthesia is avoided.

2. No expensive apparatus is required.

3. The after-effects of the anesthetic are reduced to a minimum.

4. A more complete relaxation is secured than with any other known method of administration.

5. The limits of safety are widely extended, compared with other methods.

6. A more even plane of surgical anesthesia is automatically maintained than is possible by any inhalation method—unless administered by a skilled anesthetist using a perfected apparatus.

He refers to no disadvantages. His report was based on a series of 100 cases. In all of these the method was entirely successful, and there was no evil result. There was one death, that of an old man, twenty-four hours after the operation, probably not due to the narcosis.

This appears to be a satisfactory initial record of a procedure of such tempting simplicity that it would make unnecessary the services of an expert anesthetist.

We often find in medicine, however, that innovations which appear quite satisfactory to their introducers, and, at first, to others, develop defects on fuller observation. Gwathmey himself presents his report modestly and with the conservative observation that further trial is necessary. If a few hundred or thousand cases show that the procedure is as free from danger as it is simple, it will be one of the most valuable contributions to the science and art of anesthesia that has been made in many years. —W. M. B.

"BICHLORIDE" AND CARBOLIC POISONING.

In the past few months there has been a widespread "epidemic" of cases of fatal poisoning by the swallowing of bichloride of mercury tablets. The earlier cases were, and many of the others are reported to have been, accidental. There can be little doubt, however, that most of the instances recently recorded were of suicidal origin, this poison being selected both because of the relatively pleasant form of demise the newspapers have recorded for it and because the familiar headache-tablet-mistake could be readily invoked to conceal the victim's intent.

A very proper popular demand is making for the prevention of these accidents and legislation

has been suggested to provide, 1st., that all bichloride tablets, and the containers in which they are sold, shall be of distinctive shape and color; 2nd., that they shall not be dispensed except upon a physician's prescription. To these excellent provisions we would add, 3rd., *physicians ought not to prescribe them.*

Surgeons and abstetricians can, and many of them do, conduct all of the antiseptic preparations for major or minor operations and dressings, without ever employing bichloride of mercury. What necessity, therefore, can call for its use in the household! It has been a fairly common practice to prescribe sublimate tablets for douches. Has bichloride of mercury any advantages, for such a purpose, over less toxic antiseptics? And if it has, are they not outweighed by the danger of mercurial vaginitis or more general poisoning, instances of which are not at all uncommon? For the disinfection of a wound the official or a weak tincture of iodine is far superior to bichloride of mercury, while for general wound cleansing and dressing hydrogen peroxide, boracic acid solution, and the mild, also inocuous, antiseptic mixtures familiar to every household as throat gargles, answer every first-aid requirement.

What we have said of bichloride of mercury applies even more strongly to carbolic acid to the extent that, even when handled deliberately, spilling this liquid may cause a serious burn. Moreover, the employment of even a one per cent. carbolic acid solution in an impervious wet dressing on the fingers or toes usually leads to gangrene. This is well-known to the profession, but it has not been sufficiently taught to the people at large and many a digit has been sacrificed to their ignorance.

The blame for cases of poisoning by these lethal antiseptics rests largely, we think, on the medical and nursing professions. They have been too free in ordering the drugs, too negligent of teaching their dangers, too careless of removing them from the household after their proper surgical employment has been discontinued.

Neither bichloride of mercury nor carbolic acid, lysol or any other strong cresol preparation, has ever any proper place in the family medicine closet! —W. M. B.

The "gall-bladder bridge" (either as a narrow cushion or as part of the operating table), raising the body at that point, is invaluable in increasing the accessibility of the biliary tract. It is equally useful in kidney operations.

Surgical Suggestions

In surgical treatment when to remove a drain is almost as important a question as when to use one.

Urinary leakage, even for a few weeks after ureterorrhaphy or ureteroanastomosis does not necessarily mean failure. It may cease spontaneously.

In abdominal surgery the field should be bloodless before closing the parietes. Don't depend upon it that "that little bleeding will stop," if a little extra pains with sutures or ligatures will make it stop. Sometimes "that little bleeding" doesn't stop, but causes an intraperitoneal hematoma or an alarming secondary hemorrhage.

Radiography in Mastoiditis.

A radiograph gives very positive information in regard to the condition in and around the mastoid. A normal mastoid shows a very clear cut picture in which the mastoid cells can be seen distinctly. Even the thin bony partitions between the cells show very clearly in most cases, and the difference between a pneumatic mastoid with its large cells, and the small cells and dense bone of a sclerotic mastoid, is very evident.

An inflamed mastoid, which contains pus or granulation tissue, gives an entirely different picture. The inflamed area produces a blurred, hazy picture, which is in marked contrast with the surrounding normal bone. The partitions between the cells are hardly visible or cannot be seen and the mastoid looks like a homogeneous mass. If the normal and infected mastoid are taken on the same plate, the difference between the two, shows very distinctly and the normal one furnishes a valuable standard for comparison. The position of the sigmoid and lateral sinuses can hardly be seen.

In a stereoscopic radiograph much more valuable information is obtained. The sigmoid sinus can always be seen and its relation to the mastoid cells can be clearly determined. The floor of the middle cranial fossa can also be seen and its position, relative to the posterior root of the zygoma and the antrum and the middle ear, can be defined. If the dura or the sinus have been exposed by necrosis, the break in the continuity of the bone can be seen and a positive diagnosis of exposure of these structures can often be made early, before there are any clinical symptoms of such a condition.—J. M. Ingersoll in the *Cleveland Medical Journal.*

Surgical Sociology

Ira S. Wile, M. D., Department Editor.

THE STANDARDIZATION OF HOSPITAL EXPENDITURES.

In the administration of hospitals, the budget occupies an important place. The amount of money available largely determines the character of the services to be rendered by the hospital and the limitations of resources test the executive and administrative capacity of the hospital superintendent. Dr. Howell, Superintendent of the New York Hospital (*Journal of the American Medical Association*, November 20, 1913), discusses many of the factors influencing hospital costs and endeavors to answer the following question:

"Why is it that, while hospitals are slowly but surely establishing certain standards of excellence and are attaching to these standards certain specific uses and pretty well defined prices as to cost, and in this way are approaching uniformity in the cost of institutional maintenance, there is such a wide difference in the per diem cost as there is at present —one dollar per day in some hospitals and three dollars and more in others?"

Considering the fact that municipal hospitals and many of those under private control have per diem per patient expenditures of from $1.25 to $2, while private hospitals make similar expenditures of $2 to $3 a day, one is ready to ask, is the service of the more expensively run institution better or more efficient than that of which the per capita cost is at the lower rate?

The term, standard, is difficult to define. The standard of hospital administration depends upon the city in which it is located, the neighborhood which it serves, and the endowment which is available for its administration. It is proper that the best organized and administered institution should set the standard of hospital efficiency for the weaker institutions. On the other hand, it may be impossible for institutions doing similarly effective work to be run with the same per capita cost, owing to the differences in the costs of food and labor and the system of internal organization.

The variations in salaries, and the differences in hospital construction create large distinctions in the per capita cost. Obviously, the maintenance of pathological laboratories, ambulance departments, or social service will alter the per diem money expended per patient so that it becomes impossible to compare hospital costs except of institutions with similar organizations. The mere fact of the affiliation of a hospital with a medical school increases the cost of a patient's maintenance, inasmuch as there is an additional expenditure for various examinations, not necessarily required in general hospitals not connected with medical schools.

The number of nurses and orderlies employed, the character of the cooks, the number of waitresses, the number of hospital diets which are maintained also figure largely in determining the costs of giving efficient hospital care to the patients. Similiarly, wide variations arise from the character of the patients served. Hospitals largely given over to surgical services are far more expensive than those maintaining large medical services, but with few beds devoted to surgery, gynecology, or obstetrics. Wherefore, in determining hospital costs, it is again essential to compare hospitals having similar services and then the per capita costs should be established for each department rather than as a single figure for all the patients.

When hospital service is urgent and convalescent care is given not in the hospital, but in the home, the number of patients who may be cared for annually is increased, and while the efficiency of the service may be lessened, the number of patients given emergency care is increased. Hospitals maintaining a large private room service have their costs increased disproportionately to their efficiency. In determining units of costs, it therefore becomes necessary to segregate the expenditures for private patients from those devoted to the care of ward patients.

The value of studies of per capita costs has not been thoroughly appreciated. Inasmuch as hospital trustees are responsible for the proper administration of trust funds, there should be a most careful scrutiny of the expenditures for all phases of hospital organization. There is no definite standard unit cost for the maintenance of a pathological laboratory for a hospital of a hundred beds, nor for the maintenance of a laundry for such an institution. It is possible, however, to thoroughly analyze expenditures so that trustees may appreciate wherein economies may be made with a view to increasing the working efficiency of the hospital without increasing the budget.

In the Massachusetts General Hospital, a study has shown that the per capita cost of providing food for the internes is far higher than for serving the nurses or the patients. Obviously, this is more than a mere matter of interest, but it provides a problem of dietetic studies based upon the per capita costs and the nature of the food served. Similar studies of hospital expenditures in all departments, janitorial, nursing, clerical, pharmaceutical, surgical, kitchen, laundry, laboratory, ward, private room, operating rooms, ambulance, foods, plumbing, heating, lighting and repairs would give a vast amount of information relating to the general management of hospital departments. Unit costs of hospital architecture have been given some study, but the relation of hospital construction to the internal costs of administration have not been thoroughly reported by those who have made such studies for the benefit of communities whose hospitals are to be built in the future.

The science of accounting and the studies of efficiency have not been generally applied to hospital and dispensary services. Despite the fact that standardization is not possible in the light of our present knowledge, it is practicable for individual hospitals to approximately standardize their own unit costs so that the annual budget will be based

upon definite experience carefully analyzed. It would be practically impossible to apply the standards collected for any single institution to an institution of a similar or dissimilar nature in the same or another city. Such unit costs, however, would be exceedingly suggestive to hospital superintendents throughout the country in comparing their per capita expenditures with a view to recognizing the variations in different departments for the purpose of determining whether their relative costs are reasonable and productive of the best results.

In the case of state and municipal institutions, it is essential to determine by a scientific analysis of all the departments the per capita costs in order to secure internal economies or expansions, as may be required to enhance the communal value of the institution without increasing the annual budget, save insofar as may be demonstrated to be necessary on the basis of the relation of the per capita costs to the per capita benefits. The mere expenditure of increased sums of money per capita in various departments does not indicate that better service is afforded; and on the other hand a decrease per capita expenditure does not necessarily mean a decreased benefit to the individual patient. The factors entering into hospital care are so numerous that until a careful investigation is made of the relative cost of each of them and their relative worth, it will be difficult to interpret the hygienic, medical and surgical value that should be connoted in items of hospital per capita costs.

Book Reviews

A Manual of Surgical Treatment. By SIR W. WATSON CHEYNE, Bart., C.B., D.Sc., LL.D., F.R.C.S., F.R.S., Hon. Surgeon in Ordinary to H. M. the King; Senior Surgeon to King's College Hospital; and F. F. BURGHARD, M.S. (Lond.), F.R.C.S., Surgeon to King's College, and Senior Surgeon to the Children's Hospital, Paddington Green, London. *New (2d) edition.* Thoroughly revised and largely rewritten, with the assistance of T. P. LEGG, M.S. (Lond.), F.R.C.S., Surgeon to the Royal Free Hospital; Assistant Surgeon to King's College Hospital, and ARTHUR EDMONDS, M.S. (Lond.), F.R.C.S., Surgeon to the Great Northern Central Hospital. In five octavo volumes, containing 3,000 pages; illustrated with about 900 engravings. *Volume V;* 619 pages. Philadelphia and New York: LEA & FEBIGER, 1912. Price, cloth, $6, net, per volume.

In reviews of the four preceding volumes we have sufficiently indicated the excellence of this work and the thoroughness of its revision in this second edition. Volume V, the last volume, deals with the treatment of the surgical affections of the pancreas, liver and spleen, the neck, breast and thorax, and the genito-urinary organs.

The Principles and Practice of Gynecology for Students and Practitioners. By E. C. DUDLEY, A.M., M.D., ex-President of the American Gynecological Society; Professor of Gynecology, Northwestern University Medical School, etc., etc. *Sixth edition.* Large octavo; 795 pages; 439 illustrations and 24 full-page plates, some in colors. Philadelphia and New York: LEA AND FEBIGER, 1913. Cloth, $5.00, net.

This well-established work needs no extended review. As before, the subjects are grouped on the basis of pathologic and etiologic relationship, rather than by anatomical classification, which greatly enhances the value of the book. Various new operations are described and illustrated, notably types of hysterectomy, myomectomy and perineorrhaphy. The entire book shows careful revision, and extensive changes have been made in the general chapters dealing with inflammation, tumors and traumations. The numerous original illustrations, of which several are new, are of the highest excellence.

Cancer of the Breast. An Experience of a Series of Operations and Their Results. By CHARLES BARRETT LOCKWOOD, F.R.C.S. (Eng.), Consulting Surgeon to St. Bartholomew's Hospital, etc., etc. London: HENRY FROWDE and HODDER & STOUGHTON, 1913.

Almost completely omitting reference to the work of others, Lockwood presents a monograph based on his own extensive material that should prove a model for honesty, simplicity, and clinical thoroughness. The book is replete with details, but the principal themes are never lost in the wealth of minutiae. It is believed that these remarks upon the value of Lockwood's monograph will serve the purpose of calling attention to his exceedingly instructive work far better than the presentation of many minor criticisms—mostly favorable and a few adverse. The book should be thoroughly studied by all interested in the surgery of breast cancer.

Applied Pathology. Being a Guide to the Application of Modern Pathological Methods to Diagnosis and Treatment. By JULIUS M. BERNSTEIN, M.B. (Lond.); D.P.H. (Camb.); M.R.C.P.; Assistant Physician (late Pathologist) to the West London Hospital; Lecturer in Clinical Pathology to the Post-Graduate College, etc., etc. Octavo; 395 pages; 45 colored plates and 46 drawings. London: UNIVERSITY OF LONDON PRESS. Published for the University of London Press, Ltd., by HODDER & STOUGHTON and HENRY FROWDE, 1913.

This work covers a rather wide scope. In addition to the clinical pathology of the blood, urine, sputum, feces, cerebro-spinal fluid, exudates, etc., there are chapters on opsonins, vaccine therapy, bacteriology, serotherapy and diagnosis, tuberculin diagnosis and therapy and chemotherapy. Obviously only the barest outlines of these topics can be discussed in a book of this size. As a manual for the general practitioner this book may therefore prove useful, but as a work of reference it is of no value whatever. Technical methods are given very meagerly. The text, as far as it goes, is satisfactory. The only large point for criticism is the author's belief (in common with most English writers) in the omnipotent properties of vaccines.

Dysenteries: Their Differentiation and Treatment. By LEONARD ROGERS, M.D., F.R.C.P., F.R.C.S., C.I.E., Physician to the Isolation Ward (cholera and dysentery) Medical College Hospital, and Professor of Pathology, Medical College, Calcutta. Octavo; 336 pages. London: HENRY FROWDE and HODDER & STOUGHTON, Oxford Medical Publications, 1913.

It is well to remind the reader that the author of this work is the discoverer of the specific action of emetine in amœbic dysentery. If on no other grounds, the appearance of this book should therefore be welcome. In addition, however, we find it a mine of information concerning the various forms of dysentery, especially the amœbic and the bacillary, all based on an immense experience in India. Both these maladies are discussed in the usual didactic order, the etiology, pathology, symptomatology and therapy being discussed successively. The entire tone of the book is one of authority, affording a monograph that no one interested in dysentery can well be without.

The Principles and Practice of Medical Hydrology. Being the Science of Treatment by Waters and Baths. By R. FORTESCUE FOX, M.D. (Lond.); F.R. MET. SOC. Octavo; 295 pages. London: UNIVERSITY OF LONDON PRESS; HODDER & STOUGHTON and HENRY FROWDE, 1913.

This book takes up in a systematic manner the chief facts connected with the use of water in the therapy of disease. The first section deals with the physiology of bathing and the use of baths in health. The second deals with the principles involved in the use of water in disease; the third describes the various mineral springs, while the final portion reviews briefly the indications which call for the use of the various hydro-therapeutic procedures. The book is especially useful to patients taking cures in England, as particular attention is paid to the British spas.

Case Histories in Pediatrics. A Collection of Histories of Actual Patients Selected to Illustrate the Diagnosis, Prognosis and Treatment of the Diseases of Infancy and Childhood, with an Introductory Section on the Normal Development and Physical Examination of Infants and Children. By JOHN LOVETT MORSE, A.M., M.D., Associate Professor of Pediatrics, Harvard Medical School; Associate Visiting Physician at the Infants' Hospital and at the Children's Hospital, Boston. *Second edition.* Octavo; 639 pages. Boston: W. M. LEONARD, 1913. Price $5.50.

The appearance of a new edition of Morse's book after so short a period of time is a recommendation in itself; but this second edition is so much more complete and so superior to the older one that it is in reality a new book. The number of case histories has been doubled, and there has been added a section of fifty pages on the normal development and physical examination of children. This portion of the new book should prove of the greatest value to the student, since in it he will find facts and figures relative to the child's growth and development, set forth in so terse and clear a manner that they must needs be very easily found and remembered.

The illustrations, which in the first edition were few in number and poorly executed, are now a very distinct addition to the usefulness of the book, being well reproduced on glazed paper.

The case histories are reported in a clear and interesting style, which makes their reading entertaining as well as instructive. For the student a careful consideration of the history and physical examination of each case, before he attempts to solve the diagnosis, must necessarily acquaint him with the commonest signs and symptoms of children's diseases. For the practitioner, however, the paragraphs on diagnosis, and especially those on prognosis, are very helpful, especially when it is remembered that these are all actual cases whose outcome is faithfully recorded.

Altogether, this new edition may be most highly recommended as an interesting and highly useful text-book of pediatrics.

Malaria. Etiology, Pathology, Diagnosis, Prophylaxis and Treatment. By GRAHAM E. HENSON, M.D., Member, American Medical Association, Florida Medical Association, American Society of Tropical Medicine, Medical Reserve Corps, United States Army (non-active list). With an introduction by CHARLES E. BASS, M.D., Professor of Experimental Medicine, Medical Department Tulane University, New Orleans. Octavo; 190 pages; 27 illustrations. St. Louis: C. V. MOSBY COMPANY, 1913.

This small book, like his other contributions to the subject, indicates Henson's first-hand clinical and hemotological studies of malaria. It is a first-rate presentation of the most important phases of the subject. The occasional appearance of malaria as a complication of surgical illnesses, and the occasional confusion of malarial seizures with acute abdominal disorders, make it important for surgeons to be familiar with these manifestations which Henson calls attention to. The author describes the various forms of malarial parasites, their biological characters, and the various forms of pathogenic and non-pathogenic mosquitoes. The description of the pathology of the disease is short but covers most of the ground. In the chapter on prophylaxis the various methods by which larvæ may be exterminated are admirably set forth. The various methods of treatment of malaria are reviewed and the author's preferences indicated. The illustrations are mostly half-tone photographs and are only fair in quality.

Gout. Its Etiology, Pathology and Treatment. By JAMES LINDSAY, M.D. (Edin.), M.R.C.P. (Lond.), Hon. Physician, formerly Hon. Pathologist and Resident Medical Officer, Royal Mineral Water Hospital, Bath. Duodecimo; 212 pages. London: HENRY FROWDE, *Oxford University Press*, and HODDER & STOUGHTON, 1913.

The discussion of the etiology and clinical phenomena of gout leaves nothing to be desired. The chapter on the chemistry of gout reveals acquaintance with modern studies. In the treatment, the author recommends the usual measures and regards colchicum as a specific. No mention is made of some of the newer drugs. The spa treatment is discussed fully, and the value of the various English and Continental spas are weighed in the balance. The author has evidently a wide experience with this disease, and has made a useful manual.

The Problem. The Autobiography of a Physician. By CHARLES PERCY, B.Sc., M.D. Duodecimo; 128 pages. New York: THE SHAKESPEARE PRESS, 1913.

The title of this book is well chosen, whether the author intended that it should connote the subject of his thesis or the state of mind of the reviewer as to the character of the book. The book may be regarded either as a quasi-metaphysical disquisition on sleep or as a ghastly fantastic tale. Whatever it is, it is tiresome, long drawn out and without point.

Collected Papers From the Research Laboratory, Parke, Davis & Co. Small octavo; 287 pages, Reprints Vol. 1. Detroit, Mich., 1913.

The reprints collected in this volume represent work of high scientific value and reflect favorably upon the enterprise of the manufacturers. The papers include researches in botany, bacteriology, pharmacology and the internal secretions.

The Treatment of Rheumatic Infections. Octavo; 134 pages. Press of PARKE, DAVIS & COMPANY, 1913.

This book deals with the theory and practice of the rheumatism phylacogen. To those desiring to try this new method of therapy, it should prove a valuable manual.

Books Received

Anatomy and Dissector in Abstract. By STEWART L. MCCURDY, A.M., M.D., author of "Oral Surgery," "Orthopedic Surgery," etc.; Professor of Anatomy and Surgery (Dental Department), University of Pittsburgh; Orthopedic Surgeon, Presbyterian and Columbia Hospitals, Pittsburgh, etc. *Fourth edition.* Vest pocket size; 372 pages; illustrated; flexible leather. Pittsburgh: MEDICAL ABSTRACT PUB. CO.

The Surgical Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago. *Volume II. Numbers IV, V and VI.* Octavos; illustrated. Philadelphia and London: W. B. SAUNDERS COMPANY, 1913. Published bi-monthly. Price per year: Paper, $8.00. Cloth, $12.00.

The Practitioner's Case Book. For Recording and Preserving Clinical Histories. Prepared and arranged by the Editorial Staff of the *Interstate Medical Journal.* St. Louis: THE INTERSTATE MEDICAL JOURNAL CO.

Progress in Surgery

A Résumé of Recent Literature.

Recent Advances in the Surgery of the Lung and Pleura. H. MORRISTON DAVIES, London. *The British Journal of Surgery*, 1913, Vol. 1, No. 2.

Many who have not followed closely modern advances in this field erroneously believe that the progress has been exclusively in the technic allowing of operations in the open chest. Although the apparatuses of Sauerbruch, Brauer, and others have greatly facilitated the surgical treatment of certain groups of intrathoracic diseases, "the total number of cases in which this technic is necessary is quite small compared with the great number of patients who have benefited by modern progress. The result of such progress has been the emergence of three main lines of treatment, which may be termed: (1) Treatment by collapse; (2) treatment by consolidation and fibrosis (solidification); (3) treatment by excision."

The treatment of pulmonary tuberculosis by nitrogen displacement, first devised by Forlanini in 1892, now rests upon a firm basis. It is especially indicated in those chronic and progressive cases that resist the usual methods of treatment, for tuberculosis complicated by extensive cavity formation or by secondary pyogenic infection, and for those cases complicated by repeated or profuse hemophysis. Two serious complications may arise in the application of the nitrogen displacement method: Nitrogen embolus, and the train of symptoms termed "pleural eclampsia" or the "pleural reflex." The former is due to the needle entering the lung and the gas escaping into a blood-vessel. The latter may be caused by the needle puncturing the pleura, by the introduction of the gas under excessive pressure, or by the rupture of delicate adhesions from the pressure of the introduced nitrogen. The symptoms generally consist of a profound syncope, usually transient, but sometimes ending fatally. Both of the complications are avoidable by: 1. Local anesthetization by novocain, and 2. The employment of an apparatus of the Forlanini type, the water manometer indicating the position of the needle in the pleural chink.

It is well know that the usually employed method of aspiration of the chest for pleural effusion is not devoid of danger, and that it does not remove a sufficient amount of fluid in many instances. Davies has shown that, if oxygen is allowed to flow into the chest as soon as symptoms of distress from the aspiration appear, the symptoms will at once vanish. Furthermore, by combining oxygen replacement with aspiration, all of the fluid can be withdrawn. This is radiographically demonstrable.

Concerning the treatment of acute abscess and gangrene of the lung (the author does not differentiate between these conditions), it is pointed out that the results of the surgery of the past ten years have shown steady diminution of mortality and steady increase in the percentage of cures. This improvement is undoubtedly dependent upon the progress of radiology in localizing pulmonary foci and upon the diminished danger of opening the thoracic cavity. Davies enters into the details of the operation for acute abscess and gangrene.

Solidification of the lung is the basis of the surgical treatment of bronchiectasis and of tuberculosis. The nitrogen displacement method has already been discussed. For permanent solidification, however, that procedure is not effectual and the following must be employed: (a) By solidification of part of the lung (rib resection or division of the phrenic nerve or ligature of the pulmonary artery); (b) by solidification of the whole lung (rib resection or rib mobilization). The various indications for these different types of operation are discussed by the author.

Hemorrhagic Infarcts of the Pancreas. CHABROL, *Archives des Maladies de l'Appareil Digestif et de la Nutrition*, September, 1913.

Chabrol advances as a theory the idea that hemorrhages into the pancreas with fat necrosis are due to a thrombosis of the veins of that organ. This takes place, as it does in pylephlebitis, involving the mesentery of the intestine and the portal system elsewhere. It is based upon a diseased condition of the wall of the vein and of the artery. Cirrhosis of the pancreas, associated with hepatic cirrhosis, predisposes. Following the pancreatic thrombosis, there is an activation of trypsinogen, a liberation of the lipase, causing autolysis of the pancreas and diffuse fat necrosis.

Bacterial infection, through the Wirsung duct or hematogenous entrance, plays a part in the process.

The Anatomical Findings in Carcinomata Treated by Mesothorium and X-Ray. (*Anatomische Befunde bei mit Mesothorium und Röntgenstrahlen behandelten Karzinomen.*) PAUL HAENDLY, *Zentralblatt für Gynäkologie*, No. 39, 1913.

Five specimens were examined, three of which were obtained through operation and two through autopsy. The superficial layers of carcinoma cells are seen to necrose and disappear, while the deeper layers of cancer cells show more or less degeneration of the nucleus and the protoplasm. There remains, however, in spite of the deep penetration of the ray, a certain rest of cancer-nests which are capable of further propagation. The other tissues adjacent to the carcinoma are also affected. The effect is not uniform. It must be conceded that the effect of the *x*-ray and of mesothorium has been considerably increased owing to the newer method of more intense filtration without having the deleterious action on healthy tissues.

The Clinical Status of Cancer of the Corpus Uteri. (*Die Klinische Stellung des Carcinoma Corporis Uteri.*) W. WEIBEL, *Zentralblatt für Gynäkologie*, No. 39, 1913.

Of 69 cases of cancer of the body of the uterus reported from the Wertheim Clinic only two cases were considered inoperable. In 15 per cent of the cases the tumor was discovered by accident. In 19 cases it was associated with myomata, in 5 cases with cysts of the ovary, in 5 cases with carcinoma of the ovary, in one case with carcinoma of the tubes, and in still another case with ovarian sarcoma. The striking symptom was hemorrhage which was especially marked in the post-climacteric state. The primary mortality was 10½ per cent. The radical operation showed a far greater mortality than the vaginal operation, being as 25 per cent to 2.8 per cent. Nulliparæ are particularly susceptible. The parametrium is relatively free while the regional lymph-nodes are more commonly attacked than was apparent hitherto. The permanent cures after five years included 51.2 per cent of the cases. The radical abdominal operation has also decided advantage over the vaginal operation from the viewpoint of permanent cure and should be the operation of choice except where there is a distinct contra-indication against the former method. The inguinal glands need be only exceptionally removed.

Spontaneous Fracture and Bone Cysts. A. C. BURNHAM, New York. *Interstate Medical Journal*, November, 1913.

Burnham describes in detail the case of a man of forty-seven years who sustained a fracture of the right leg. A routine *x*-ray examination revealed a degenerative condition of the lower third of the right tibia associated with fracture. At the time sarcoma was diagnosed and operation advised. However, the patient refused operative treatment and the fracture united after two months. One year later the leg again gave way and the patient was unable to walk. A tumor was now present in the leg, a section of which showed giant celled sarcoma. One year later, the patient having lost thirty pounds in weight, he consented to operation and the leg was amputated at the knee. At the time of reporting the case, three years after operation, the patient remains in excellent health.

From this case and from a study of the literature, the author concludes that there is a marked resemblance of certain cases of giant-celled sarcomata to benign bone-

cyst, both in the early symptoms and in the radiographs of the early stages of growth. The case moreover emphasizes the need of taking a radiograph of every case of fracture due to slight violence; and also shows that giant-cell sarcoma of the long bones is of slow growth and proceeds with no metastases.

Synovial Lesions of the Skin. O. S. ORMSBY, Chicago. *The Journal of Cutaneous Diseases,* November, 1913.

The condition, first described by Hyde, consists of one or more wart-like projections, always over the side of bursal conected with tendons that traverse the small articulations of the hand and foot. The lesions are most often encountered over the metatarsophalangeal articulation or, in the hand, over the dorsal surface of the distal articulations of the thumb and index fingers. The form generally seen is a pea-sized, roundish mass, the center yellowish; the lesion is of long duration and quite insensitive. A peculiar fluid, syrupy and of a yellowish color, escapes when the mass is punctured, and promptly recurs even after the puncture. This fluid is not found in any other condition. Hyde states that "in every case the contents of the lesion are supplied by a synovial bursa beneath the skin, with which the lesion is either directly connected, or in communication by a short sinus."

Excision of these lesions, whose etiology is as yet very obscure, is followed by recurrence; radiography, on the other hand, resulted in cure in the four cases reported by the author.

A Preliminary Report on 120 Cases of Tuberculosis Treated With Friedmann's Vaccine. H. L. BARNES, *The Providence Medical Journal,* November, 1913.

Summarizing the report of 120 cases of tuberculous disease treated by the Friedmann vaccines at the State Sanatorium, R. I., Barnes says: The vaccine bacilli were not always acid fast. One injection of vaccine was harmless to guinea-pigs and turtles. Fourteen per cent of patients had fever reactions above 100°. Inoculation induration after first injection was present in 70 per cent. The average duration of the induration was 41 days. Abscesses occurred in 23 per cent. The average duration of discharge from the abscesses was 23 days. The cough and expectoration showed no striking improvement. Bacilli persisted in the sputum in 85 per cent of positive cases. The usual appetite continued, except in reacting patients in whom it was worse. Vaccine patients lost more weight than others. Twenty per cent had improvement in chest-pain the remainder being unchanged or worse. Patients had more fever and night sweats after the vaccine than before. Blood spitting was as frequent after as before vaccine treatment. There was no unusual tendency towards disappearance of physical signs, which were increased in many patients who were improving before. Forty per cent of the 85 patients whose present condition is known at an average period of four months after the first injection are worse.

Conclusions: 1. This report offers no evidence as to whether or not the vaccine can prevent tuberculosis in those who are free from it, as no healthy persons were inoculated.

2. It offers no evidence as to the liability of the vaccine to induce local or general tuberculosis, as this can be determined only by autopsy or special bacteriological work.

3. One patient with joint tuberculosis showed striking improvement, which makes it desirable that similar patients who have received this vaccine should be observed and reported on by those who have had orthopedic experience. The four other patients having active tuberculosis outside the lungs have not shown unusual improvement.

4. The 120 patients having pulmonary tuberculosis have shown none of the immediate and wonderful results reported by Friedmann and others before the Berlin Medical Society. On the contrary, about 17 per cent of the cases have shown an increased activity of the disease, which would not have been expected under ordinary sanatorium treatment. The permanent good or harm done these patients can only be measured with reasonable accuracy from one to three years after the administration of the vaccine.

The Prognostic Value of the Evidence of Streptococci in the Vaginal Secretion of Women in Labor. (*Uber die Prognostische Bedeutung des Nachweises von Streptokokken im Vaginalsekret Kreiszender.*) MARGARETE GOLDSTROM, *Zentralblatt für Gynäkologie,* No. 40, 1913.

In 902 women examined during the period of labor, streptococci were absent in 514 cases, anhemolytic streptococci were present 369 times and hemolytic streptococci were found 19 times. The outcome of these labor cases was varied and classified according as to the method employed in the delivery. The author's conclusion is that the prognosis for women who enter the clinic without fever is absolutely independent of the presence of streptococci in the lower third of the vagina.

The Trendelenburg Posture in the Reposition of the Retroflexed Uterus. (*Beckenhochlagerung bei Reposition des Retroflektierten Uterus.*) DR. LIEBL, *Zentralblatt für Gynäkologie,* No. 40, 1913.

The elevation of the pelvis as recommended by Trendelenburg has been found serviceable in the attempt at reposition of the retroflexed uterus. It is especially helpful in retroflexed gravid uteri. In some cases the very postural change induces spontaneous reposition.

Pigmentation of the Nails During Pregnancy. (*The Rôle of the Glands of Internal Secretion in the Genesis of Fibroma Molluscum Gravidarum, Together with a Description of the Pigmentation of the Nails in Pregnancy.*) SAMUEL M. BRICKNER, New York. *Surgery, Gynecology and Obstetrics,* October, 1913.

Brickner describes a perpendicular pigmentation of the nails arising in the fourth month of pregnancy. The color was at first light brown, but became much darker as the pregnancy advanced. Eighteen months later the pigmentation was still present, but was not as dark as it had been. Photographs accompany the article.

A Contribution to the Histogenesis of Sarcomatous Changes in Uterine Fibromyomata. SAMUEL H. GEIST, New York. *American Journal of Obstetrics,* December, 1913.

Geist has studied the material in the Mt. Sinai Hospital laboratory and has found two cases in which it was possible to trace the origin of the sarcoma cells from the muscle cells of a fibromyoma. In other cases, the interstitial tissue of a myoma, the adventitia and endothelium of the lymph and blood-vessels have been seen to be the origin of the malignant change. To these, Geist adds the muscle cells as a source of the neoplastic change.

Cardiac Disease and Pregnancy. (*Herzfehler und Schwangerschaft.*) P. KREISS, Dresden. *Zentralblatt f. Gynäkologie,* December 13, 1913.

The author sums up his conclusions as follows: 1. In cases of mild decompensation, absolute rest in bed, with a careful control of the specific gravity, amount and contents of the urine. 2. If the symptoms of decompensation do not disappear in a few days, digitalis, caffeine and alcohol are administered. 3. If the edema and ascites, the dyspnea and cyanosis and extra-systolic beats do not disappear, and if the amount of urine becomes diminished while the specific gravity rises, and if casts are found, the interruption of the pregnancy must be considered. 4. Induction of labor is also indicated in cases of congenital stenosis of the pulmonary valve, of pericarditis and of combined endocarditis and myocarditis. It is also to be resorted to if the cardiac disease is complicated by tuberculosis, pernicious anemia or large goiters.

The Treatment of Sterility by the Dudley-Reynolds Operation. F. C. HOLDEN, Brooklyn. *American Journal of Obstetrics,* December, 1913.

Holden, from an extended experience, concludes that the Dudley operation takes the cervix out of the axis of the

vagina and puts it into its normal axis; it removes the external os from the anterior position in the vagina and places it well back in the seminal pool. The Reynolds operation removes the flexion of the anterior wall of the uterus and gives a longer anterior invagination with a straightened anterior uterine wall. About eighty-five per cent of the cases of dysmenorrhea and twenty-five per cent of those of sterility are cured by the operation. These figures correspond quite accurately to those of S. Brickner given in his article on the Dudley operation, with which Holden compares his statistics.

Malignant Growths of the Colon, With Especial Reference to Early Diagnosis and Treatment. R. W. WESTBROOK, Brooklyn, N. Y. *Long Island Medical Journal,* December, 1913.

Among the points on diagnosis of colonic new growths, Westbrook describes a case in which small pigmented spots and warts on the skin of the abdomen occurred in a case of cancer of the large gut, and just as in the cases described by Willy Meyer, these skin manifestations became less marked when the new growth had been removed.

The most common seat of colon cancer, next to that of the sigmoid, is about the ileo-cecal valve, and here it is comparatively early accessible to palpation. In this region the mass, when small, is often mistaken for a chronically thickened or adherent appendix.

The author believes that when cancer is suspected and the usual methods of diagnosis have not solved the problem (*x*-rays, sigmoidoscopy, etc.), that exploratory operation is advisable. Especially is this the case in growths of the large gut, owing to the fact that from their lymphatic drainage they are considerably less rapidly spread than are cancers of the stomach. For this reason also, these tumors should be surgically attacked when even clinically far advanced.

A Manifestation of Hypothyrosis Not Heretofore Described. HEINRICH STERN, New York. *The Archives of Diagnosis,* October, 1913.

From a consideration of four cases which are reported in detail, Stern concludes that there may be very distinct pathological manifestations on the part of the urinary tract in cases of hypothyroidism. Three of his cases are women, one a man. The symptom which led to cystoscopy was dribbling of urine. The cystoscope revealed a doughy infiltration along the floor of the urethra, which disappears on the administration of thyroid substance, and which the author therefore concludes must consist of myxedematous tissue. The author believes that in frequent painful micturition, a general hypothyrotic state of the individual with manifestations in the lower urinary tract must be thought of and a cystoscopic examination insisted upon; that furthermore such symptoms may be the only ones of import in hypothyroid individuals; last, that enuresis in children as well as in adults may be due to a hypothyroid state, that the cures of such cases of thyroid medication may be due to the disappearance of myxedematous swellings from the lower urinary tract, and that in persistent bed-wetting a cystoscopy should be insisted on.

Bilateral Hydroureter—Chronic Pyocyaneus Infection. HENRY HEIMAN, New York. *Archives of Pediatrics,* November, 1913.

Heiman describes the case of a male child five years of age, who was admitted to the hospital for pyuria, fever and lumbar pain. A careful study, both bacteriological and cystoscopic, revealed the fact that the child was suffering from a bilateral dilatation of the ureters which were greatly twisted and contorted, and that the urine was infected by the pyocyaneus organism. The dilatation of the ureters was demonstrated by the injection of 40 per cent argyrol into the bladder, the child being put into the Trendelenburg position so as to allow the fluid to pass up into the pelvis of the kidneys. *X*-ray pictures were then taken. The child was treated with pyocyaneus vaccine, but only temporary relief was obtained.

The Tonsils: Some Pathological Reasons for Their Removal. LORENZO N. GROSVENOR. *The Journal-Lancet,* December 1, 1913.

The author presents a number of illustrations of microscopic sections of removed tonsils and comments on the frequency with which infectious material is found within their substance. Ray fungi were present in 15 per cent of the cases, tubercle bacilli in 5 per cent. In three cases bone tissue and cartilage was found, which led the author to the conclusion that these were remnants of displaced embryonic tissue from the second bronchial arch. The finding of so many infected tonsils is an added argument in favor of tonsillectomy as against tonsillotomy.

Acute Thyroiditis as a Complication of Acute Tonsillitis. C. F. THEISEN, Albany, N. Y. *New York State Journal of Medicine,* December, 1913.

Theisen describes seven cases of acute inflammation of a previously normal thyroid gland. In six of these seven the inflammation followed immediately upon an attack of acute tonsillitis. The gland became swollen, tender, and the skin over it became reddened. At the same time the patients experienced pain and, especially in those cases in which the left lobe was involved, dysphagia. The disease in each case occurred in a young woman. In two of the cases the illness was followed by a diffuse goiter. The writer gives a brief review of the literature which shows that the condition has been very seldom recorded.

The Intranasal Treatment of Dysmenorrhea, With a Report of 93 Cases. EMIL MAYER, New York. *Journal American Medical Association,* January 3, 1914.

Referring first to Fliess' work on the relation between the nose and uterus, and his description of "genital spots" in the nasal mucosa, Mayer reports his own experience with the intranasal method of treatment of dysmenorrhea. In cases in which absence of uterine disease as a cause was established by careful examination, and the failure of the usual treatment, especially when there was no obvious nasal stenosis which was so in most the cases, and there also existed decided tumefaction about the genital spots, he found that the application of cocain gave wonderful relief to many of the patients. This treatment had to be repeated at each menstruation, and he therefore substituted the galvanocautery or trichloracetic application. The results obtained by the latter method were so permanent that he has lately used this exclusively. He says: "A mild solution of cocain was applied just before the use of the acid. The slough that forms disappears in about five days, and another application may then be made. The patient was then asked to report the results of her next menstruation. If entirely favorable nothing further was done." In cases in which relief was slight or wanting, four applications were made between the menstrual periods, and if no benefit followed then it was so reported. Ninety-three cases are briefly reported to go into the author's reprints. His conclusions are as follows: "1. Permanent relief is obtainable by intranasal treatment from 50 to 75 per cent of the cases. 2. Trichloracetic acid applied to the genital spots four times at intervals between menstrual periods is usually sufficient to obtain lasting results. 3. It affords an additional field of usefulness to our therapeutics. These patients were from every walk in life. Only the bare facts of the cure of a large number of these patients are given; but we should bear in mind that all of these women suffered inordinately, for most women accept some pain at menstruation as a matter of course, and it is only after the suffering becomes unbearable that the physician is consulted. Therefore, their relief without drugs, operation and uterine treatment, by a few applications to the nose adds materially to their comfort and the joy of living."

Closed Tuberculous Pyonephrosis. H. A. FOWLER, Washington. *Journal American Medical Association,* January 3, 1914.

Fowler describes closed pyonephrosis as one of the most unusual complications of renal tuberculosis and one that presents greater difficulties in certain cases for diagnosis

than any other condition of the kidney. Even with the aid of the newer methods a definite pre-operative diagnosis is sometimes impossible. In the majority of cases there is a renal distention showing itself by a lumbar or abdominal swelling. In a smaller number there is no swelling present and the affected organ is atrophic. The pathologic changes are not limited to the kidney and ureters, the infection may extend elsewhere by rupture of the sac or indirectly through the lymphatics. The bladder may also become secondarily infected. The cases can be divided into the following three groups: 1. The bladder is tuberculous. In the region of the supposedly diseased kidney a large tumor, the pyonephrotic sac is found. The ureter on this side is impermeable. Diagnosis is easy. 2. The bladder is normal. One ureter is impermeable, and on this side there is a tumor in the kidney region. Diagnosis is possible from the history of the case, and symptoms referable to other organs. 3. The tuberculous involvement of the bladder is far advanced, and cystoscopy is impossible. An enlarged kidney can be palpated. Diagnosis is possible only by exploratory incision. The enlarged kidney may be healthy and only hypertrophied, while the other kidney is atrophic and tuberculous. In the case reported the abscess was opened and temporary improvement followed, but profuse discharge continued, and a second operation had to be done. The bladder was also infected from the first, though there was no marked ulcerative cystitis, which had been observed by another physician previously. This had apparently cleared up and disappeared, and shows how the bladder tuberculosis sometimes heals when the primary source of inflammation has been removed. Another feature of the case was the rupture of the abscess through the diaphragm, causing a tuberculous empyema, and still another was the formation of a fecal fistula through the operation wound, accounted for by the removal of support of the weakened and adherent bowel by drainage of the abscess.

The Treatment of Dysmenorrhea With Atropin. (*Zur Atropinbehandlung der Dysmennorrhoë.*) J. NOVAK, Vienna. *Wiener Medizinsche Wochenschrift,* December 11, 1913.

Novak holds atropin in high esteem for the treatment of dysmennorrhea. In 38 patients in whom this drug was tried, the pain either completely disappeared or was very slight. The drug is given only during the menstrual flow and in doses of 0.0005 three times daily, or in suppositories (0.001) once or twice daily. The article concludes with a discussion of the physiological rationale of this form of therapy.

The Elimination of Ascites. (*Zur Beseitigung des Ascites.*) J. KUMARIS, Athens. *Centralblatt für Chirurgie,* December 13, 1913.

Kumaris comments on the inadequacy of the current surgical methods of treating ascites, such as the Talma operation, anastomosis of the peritoneum to a vein, etc. On physiological and experimental grounds, Kumaris advocates the removal of large portions of the parietal peritoneum, thereby enabling the ascitic fluid to become absorbed by the lymphatics of the bared tissues. The operation, briefly, consists in removal of large areas of peritoneum of the anterior abdominal wall, over the diaphragm, the liver, the spleen and near the hilus of the kidney. In one case the result was brilliant up to the time the patient died from facial erysipelas twenty-two days after operation. While Kumaris rightly holds that the period of observation is too short, he nevertheless believes that on purely theoretical grounds the operation deserves trial.

Diaphragmatic Friction, an Early Symptom of Gastric Perforation. (*Das Zwerchfellreiben ein Frühsymptom der Magenperforation.*) A. BRENNER, Linz. *Weiner Medizinische Wochenschrift,* November 27, 1913.

In five or six cases of perforation of the stomach following ulcer, Brenner found a peculiar metallic tinkling friction sound on the sides of the abdomen below the insertion of the diaphragm. This sound is due to the rubbing of the air-containing gastric contents against the dilated stomach. Brenner obtained this sign in the very earliest hours after perforation, even as early as one and a half hours after.

Comminuted Fractures of the Clavicle. (*Fractures Comminutives de la clavicle.*) A. MOUCHET and O. PIZON, Paris. *Paris Médicale,* November 15, 1913.

Comminuted fractures of the clavicle are important, especially on account of the deformity caused by excessive callus, and second, because of the danger of splinters injuring the brachial plexus. The authors have had the opportunity of observing four cases, and these are reported in detail. Two were occasioned by direct violence, but the other two followed a fall on the shoulder. Clinically, these cases showed a marked difficulty in reduction and in keeping the fractured parts in position. This made the physician suspect an intermediary fragment of bone. Even with the *x*-ray this fragment is hard to see because it is usually placed behind the lower border of the bone. All four cases were treated by an open operation, removal of splintered bone, and wire suturing of the fragments. The results in all the cases were excellent.

Case of Embolus in the Abdominal Aorta, Operation, Cure. (*Fall von Embolus Aortae Abdominalis, Operation, Heilung.*) F. BAUER, Malmö, Sweden. *Zentralblatt für Chirurgie,* December 20, 1913.

The patient was 39 years old and had suffered from mitral disease of rheumatic origin for many years. The patient was suddenly seized with severe pains in both lower extremities and paralysis. The pulse was 92, irregular; the skin over the lower extremities was cyanotic, livid, cold and anesthetic. The femoral pulses were impalpable. The diagnosis of embolus of the aorta above the bifurcation of the iliacs was made. Under a general anesthetic the aorta was exposed and was found to pulsate above the bifurcation, but both common iliac arteries were pulseless. After compressing with the fingers, the aorta was opened, exposing the embolus which was easily removed. The embolus was 3 cm. long and was the shape of a bicuspid tooth, each cusp having fitted into the common iliac arteries. The patient stood the operation well and made a perfect recovery.

Subpectoral Abscess. Report of a case. C. LEGIARDI-LAURA, New York. *Medical Record,* January 3, 1914.

This is a rather rare condition, but of much interest; first, because it is often difficult to diagnose; second, because the mortality is very high. The abscess may be situated under either the pectoralis major or the pectoralis minor muscles. The starting point of the infection is usually in the axillary or subclavian lymph nodes. The onset of the symptoms is accompanied by high fever and pain in the chest, suggesting a pulmonary condition. Local bulging is a late symptom, especially if the abscess is under the pectoralis minor. This is why the condition is so infrequently diagnosticated in its early stages, and why in consequence the mortality (from sepsis) is high. The author reports a case with recovery.

Operation for Aneurism by Bloodvessel Transplantation. (*Zur Operation des Aneurysma mit Gefässtransplantation.*) E. UNGER, Berlin. *Berliner Klinische Wochenschrift,* November 24, 1913.

Unger reports three cases. The first was a popliteal aneurism which he resected and restored the continuity of the vessel by implanting a section of the saphenous vein 15 cm. long, using the Carrel suture. The result was perfect. The second was an arteriovenous aneurism of the femoral artery. The operation necessitated extirpation of the aneurism, suture of the femoral vein and transplantation of the saphenous vein into the defect in the femoral artery. This case also was successful. In the third case, an aneurism of the popliteal artery, transplantation of the saphenous vein was again attempted, but was unsuccessful owing to the difference in caliber between the vessels. Gangrene resulted, necessitating amputation.